



Working together to improve health care quality, outcomes, and affordability in Washington State.

## Opioid Prescribing in Older Adults

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## Background

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The 2015 update of the Washington State Agency Medical Director's Group's (AMDG) *Guideline on Prescribing Opioids for Pain* included a brief section on specific risks and challenges related to opioid use in the older adult population.<sup>1</sup> The challenges of treating this population are multifactorial, including changing pharmacodynamics and pharmacokinetics, increasingly complex drug interactions, especially with other central nervous system (CNS)-active drugs, presence of severe co-morbidities, declining cognitive function, increasing social isolation, and complex care support needs.<sup>2</sup>

The treatment of chronic pain and prescribing of opioids in older adults is an increasingly relevant topic given the aging US population. In 2019, 54.1 million Americans were older than 65 years. From 1900 to 2019 the percentage of Americans over 65 has almost quadrupled from 4.1% to 16%. The percentage of older adults in the population is projected to continue to increase to 21.6% by 2040.<sup>3</sup>

The 2018 Agency for Healthcare Research and Quality report highlighted increasing rates of opioid-related hospitalizations among older adults, with highest reported median rates in Oregon and Washington.<sup>4</sup> While opioid prescribing and mortality specific to prescribed opioids have fallen in recent years the CDC reported a 4.8% relative increase in the opioid-related mortality rate for persons  $\geq 65$  years between 2017 and 2018.<sup>5</sup>

Providers must recognize and address the unique challenges of treating frail older adults to avoid severe harm. Normal aging is associated with multiple, non-uniform changes throughout the nervous system that may each contribute to by age differences in pain experience. Aging is associated with increases in baseline inflammatory activity and prevalence of neuropathies, along with potential impairment of visual acuity, and changes in pain threshold and tolerance. However, the impact of age differences on pain intensity and quality is unclear, with conflicting reports of increases, decreases and no change across age groups. Aging also leads to changes in pharmacokinetics that may lead to alterations in absorption, distribution, protein binding, metabolism, and excretion; potentially resulting in higher peak drug levels, delayed clearance, longer duration of action and higher rates of side effects. Further, use of multiple medications (i.e., polypharmacy), especially when used with other CNS-active medications, increases the risk of drug-drug interactions and adverse drug events (ADEs).

One possible approach to address this is the Medication Therapy Management Program under Medicare. The intent of this program is to optimize therapeutic outcomes and reduce adverse outcomes through improved medication monitoring and use. For eligible Medicare patients, this program provides for an annual Comprehensive Medical Review with consultation between the prescriber and reviewer, as well as quarterly Targeted Medication Reviews, as necessary.

Many psychosocial influences from advancing age, such as social isolation and losing one's spouse can lead to depression and anxiety, which can impact perception of pain. Fear of re-injury, for example, may play a strong mediating role between catastrophizing and depression and pain disability among older patients. Psychological factors and social environment play an integral role in both presence and

treatment of pain. An integrated, coordinated, and individualized approach is therefore particularly important in the older adult population to assure optimal pain management and quality of life.

Published evidence for both older adults and in general supports interventions using multidisciplinary teams that may not always be available to providers or delivery systems. Availability of these type of services may be particularly important in cases of tapering or deprescribing of opioids.

This guideline focuses on specific concerns regarding opioid use in older adults, but does not encompass all aspects of opioid prescribing. Areas of focus are organized around clinical decision points as shown in **Table 1**. For additional guidance on opioid prescribing, refer to previous [Bree Collaborative opioid guidelines](#).

**Table 1: Opioid Prescribing in Older Adults Focus Areas**

Focus Area	Clinical Goal(s)
Acute prescribing, including acute injuries and peri-operative	Prevent unnecessary transition to long term opioid use
Intermittent opioid therapy	Allows minimal use of opioids for older adults with severe flare-ups of chronic pain
Co-prescribing opioids with CNS-active medications	Reduce impacts on cognition, falls, delirium
Non-opioid pharmacologic pain management	Evidence base and risk/benefit
Non-pharmacologic pain management	Evidence base and risk/benefit
Tapering or deprescribing	Differentiators with recent Bree recommendations for patients on long-term opioid therapy

As with previous Bree Collaborative guidelines, the evidence-based recommendations presented here are intended as general guidance, while using a patient-centered approach. The guiding principle in managing pain is to assess the individual needs of each person on their own terms.

## Recommendations for Individual Prescribers

### *Acute Prescribing (i.e., Acute Injuries and Perioperative Pain)*

#### **Prior to Procedure and Prescribing**

- Perform a risk assessment for development of severe acute postoperative pain and adverse effects from opioids. Risk factors are outlined in the table below from the [2015 Washington State Agency Medical Directors' Group \(AMDG\) guidelines](#) and [2018 Bree Collaborative Guidelines on Prescribing Opioids for Postoperative Pain](#).
- Engage in proactive pain management planning, including pharmacologic and nonpharmacologic methods of pain management. Establish realistic goals and expectations with the patient and family or caregiver (if present) including:
  - Control of pain while maximizing function,
  - Minimizing adverse events,
  - Planning for and addressing side effects, and
  - Plans to reduce and discontinue acute opioid therapy to avoid unintended long-term opioid use ( $\geq 3$  months).
- Designate a provider to be responsible for managing ongoing acute or postoperative pain, including reassessing the patient, establishing policy for opioid refills, and prescribing additional opioids, if indicated.

**Table 2: Risks for Difficult-to-Control Postoperative Pain\***

History of severe postoperative pain
Opioid analgesic tolerance (daily use for months)
Current mixed opioid agonist/antagonist treatment (e.g. buprenorphine, naltrexone)
Chronic pain (either related or unrelated to the surgical site)
Psychological comorbidities (e.g. depression, anxiety, catastrophizing)
History of substance use disorder
History of "all over body pain"
History of significant opioid sensitivities (e.g. nausea, sedation)
History of intrathecal pump use or nerve stimulator implanted for pain control

\*Adopted from 2015 AMDG Interagency Guideline on Prescribing Opioids for Pain

#### **When Considering Initiating Opioids**

- Start at 25% to 50% of what would be initiated in a younger adult and extend dosing intervals. See [opioid prescribing rules](#) on acute non-operative and perioperative pain.
- Use lowest dose for shortest duration possible, prescribing <7 days (ideally  $\leq 3$  days).
- Avoid complicated regimens. Consider the patient's other medications (e.g., muscle relaxants, antihistamines, anticholinergics).
- Use caution with morphine due to variable renal function and potential accumulation of active metabolites.
- Avoid long-acting opioids for acute pain (e.g., methadone, levorphanol, fentanyl patch or opioids delivered by extended-release formulations).

### **During Discharge and Follow-up**

- Maintain a high vigilance for opioid side effects (e.g., respiratory depression, constipation with need for bowel prophylaxis, delirium, psychomotor effects that may increase risk of falls) and signs of potential misuse.
- Track opioid use and signs of potential misuse and related outcomes.
- Be attentive to varying degrees of cognitive impairment that may impact opioid and other medication safety. Provide clear oral and written instructions that are legible for older adults with vision changes on:
  - Risks, safe use, and storage of opioids and proper disposal of unused controlled substances through [Safe Medication Return Program](#) or [Take Back Your Meds](#)
  - How to contact the designated provider who is responsible for managing ongoing acute or postoperative pain, including who will be prescribing any opioids, the policy for refills and follow-up evaluations.
  - Plans for tapering of acute opioids, including a timeline for return to preoperative or lower opioid dose for those on chronic opioids.
  - Engaging family member in treatment planning and adherence

### *Intermittent Opioid Use*

The following recommendations are based primarily on consensus of expert opinion due to a lack of published evidence.

- Consider prescribing intermittent opioid therapy for chronic conditions with sporadic flares of severe pain only if likely to improve physical function and social engagement.
- Use the lowest-dose of short-acting opioids possible, avoiding prolonged (more than a few days) and continuous (around-the-clock) use.
- Re-evaluate frequently for risk of falls, sedation, and other opioid-related adverse effects, as risk changes with advancing age and use of other CNS-active medications and alcohol.

### *Co-Prescribing with Opioids*

#### **Prior to Initiating Opioids**

- Consider non-pharmacologic modalities for pain management to prevent co-prescribing opioids with CNS-active medications, especially benzodiazepines, nonbenzodiazepine sedative hypnotics, (Z-drugs), skeletal muscle relaxants and gabapentinoids. See Non-Opioid Pharmacologic Pain Management.
- If opioids are determined to be necessary, perform a targeted medication review for benzodiazepines, Z-drugs, skeletal muscle relaxants, and gabapentinoids. Identify reason for use and determine whether medication(s) are still needed. Taper other medications, if possible, prior to prescribing opioids to limit exposure to co-prescribing with multiple CNS-active medications. If available, use a collaborative team-based approach.
  - If a CNS-active drug is prescribed by another provider, consult with that provider to develop a coordinated care plan.
  - Avoid combining opioids with benzodiazepines. If benzodiazepines are prescribed by a provider who is not a behavioral health specialist, provider-to-provider consult with a psychiatrist or psychiatric ARNP for alternatives.
  - Avoid combining opioids with gabapentinoids. Exceptions are when transitioning from opioid therapy to gabapentin or pregabalin, or when using gabapentinoids to reduce opioid dose, although caution should be used in all circumstances.

- Educate patients and caregivers on the risk of opioids in combination with benzodiazepines, Z-drugs, skeletal muscle relaxants, and gabapentinoids, including instructions to be vigilant for adverse drug effects (e.g., falls, driving impairment, sedation). Use teach-back methods to ask that adverse drug effects be reported to the prescriber.
- Deprescribe CNS-active drug combinations, whenever possible. See Tapering or Deprescribing of Long-Term Opioid Therapy. Deprescribing is defined as ‘the process of withdrawal of an inappropriate medication, supervised by a health care professional with the goal of managing polypharmacy and improving outcomes.’

### **Patients Already Using Long-term Opioids with Other CNS-Active Drugs**

- Re-evaluate chronic pain care plan with patient and their family, if available, at a frequency based on risk assessment (e.g., at least quarterly for high risk, biannually for moderate and annually for low risk) and look for opportunities to deprescribe targeted CNS-active drug combinations.
- Ensure access to annual Comprehensive Medication Review, especially for older adults with multiple chronic conditions, complex medication therapies and multiple prescribers. Medicare patients may qualify for [Medication Therapy Management Program](#), thereby have access to medication therapy review. See Recommendations for Healthcare Delivery Sites and Systems.
- Monitor for adverse effects from opioids and other CNS-active medications. When an adverse effect is identified, re-evaluate risks vs potential benefits and the chronic pain care plan.
- Optimize non-pharmacologic modalities for pain management with the patient, especially prior to deprescribing CNS-active drugs.
- Educate older patients and caregivers on the risk of opioids in combination with benzodiazepines, Z-drugs, skeletal muscle relaxants and gabapentinoids. Provider, patient and/or caregiver should participate in shared decision-making to minimize risk of drug-related adverse outcomes.

### ***Non-Opioid Pharmacologic Pain Management***

#### **General Recommendations**

The primary goal of managing chronic non-cancer pain is improvement in function and quality of life rather than a focus on pain relief alone. Working together with the patient and their caregiver to establish goals and expectations for pain management is essential. Providers should continually seek to understand the individual’s treatment goals and monitor those goals regularly.

- Avoid systemic polypharmacy whenever possible. See Co-Prescribing with Opioids.
  - Adequate pain management, especially for neuropathic pain, frequently results in the use of more than one medication and may lead to polypharmacy. This practice must be carefully scrutinized in the older adult to weigh the potential benefits for improved pain management against the potential harms, such as an increased risk of falls, confusion, and development of “prescribing cascades” – the use of additional medications to treat the adverse side-effects of previously prescribed medications.
- Using shared decision-making strategies, providers must consider existing co-morbidities and current medications when selecting non-opioid medications for pain.
- When considering non-opioid medications for chronic pain, provide older patients and their caregivers with information about evidence-based chronic pain treatments and educational materials on the harms of polypharmacy and the benefits of deprescribing.



- Since age does not always correlate with physiology, give particular attention to renal function (estimated glomerular filtration rate, or eGFR) when prescribing non-opioid medications for pain.
- Older adults are more susceptible to adverse drug effects (ADEs) and are at higher risk of serious consequences from the ADEs. Regularly assess functional status. Screen for and assess the risk for medication-related adverse events such as falls, sedation, and changes in cognition.

### **Drug Selection & Initiation**

- Consult professional resources such as the 2019 AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults for guidance in selection and dosing of non-opioid medications for pain.
- In general, initiate therapy with systemic medications at 25-50% of the typical starting dose used for a younger adult. Use longer dosing intervals and titrate slowly with close observation.

### **Medication Recommendations**

- Medications for first-line consideration:
  - Acetaminophen
    - Acetaminophen is a safe, effective, and well tolerated first-line treatment for acute and chronic mild to moderate pain in older adults. It potentiates other analgesics, including opioids. Maximum daily dose of acetaminophen is 4 grams per day for short-term use in adults, and 2-3 grams per day for frail older adults. To prevent liver toxicity, patient education on the maximum daily dose is important, as acetaminophen is available over-the-counter (OTC) and is contained in many OTC combination and flu products.
  - Topical Analgesics
    - Non-systemic topical medications, including topical non-steroidal anti-inflammatory drugs (NSAIDs), such as diclofenac 1% gel, topical lidocaine and topical capsaicin are recommended. These agents are effective for many conditions, are well-tolerated, and are useful for multi-modal pain management approaches.
- Medications to Use with Caution:
  - Oral NSAIDs
    - Oral NSAIDs are particularly dangerous for long-term use by older adults due to risk of gastric bleeding, renal impairment, development of cardiovascular disease, and fluid retention, which can lead to of worsening of heart failure and hypertension. However, oral NSAIDs may be used with caution for short-term use (1-2 weeks) for acute pain that is amenable to anti-inflammatory therapy (such as gout), with careful assessment of the harm-to-benefit ratio and specific contraindications. Educate patients that oral NSAIDs are for short-term use only and to avoid OTC combination preparations that contain NSAIDs.
  - Serotonin Norepinephrine Reuptake Inhibitors (SNRIs)
    - Consider SNRI agents, such as venlafaxine and duloxetine, for adjuvant treatment of neuropathic pain, fibromyalgia, and low back pain if other therapies are ineffective, as there is good evidence of effectiveness. Utilize care in patient selection, initiate at a low dose with slow titration, and monitor carefully for side effects. Carefully assess the patient's risk and benefit as the 2019 AGS Beers Criteria advises to use SNRI's with caution or avoid use in older adults with a history of falls and fractures, renal impairment, or taking 3 or more CNS-active drugs.

- Gabapentinoids
  - Gabapentin and pregabalin may be carefully considered when managing neuropathic pain, back pain, and fibromyalgia in older adults if other therapies are ineffective. However, they may be problematic due to increased risk of falls and cognitive impairment. Careful patient selection, initial low dose, slow titration, and close monitoring for side effects such as falls or changes in cognition is essential. Dose reduction is required if eGFR is <60 mL/min. According to the 2019 AGS Beers Criteria<sup>®</sup>, combining gabapentinoids with opioids and benzodiazepines should be avoided, especially in frail older adults, as there is evidence of substantial harm with this combination.
- Medications to Avoid:
  - Tricyclic Antidepressants
    - Although multiple studies have demonstrated good evidence for tricyclic antidepressants (TCAs), such as amitriptyline, desipramine, and nortriptyline, in reducing pain from postherpetic neuralgia and diabetic peripheral neuropathy in older populations, these drugs may have substantial anticholinergic side effects resulting in dry mouth, blurred vision, constipation, urinary retention, postural hypotension, and cognitive problems. TCAs also may increase the risk for syncope, falls, fractures, and bradycardia. Thus, the 2019 AGS Beers Criteria<sup>®</sup> strongly recommends against TCA use in older adults.
  - Muscle Relaxants
    - Skeletal muscle relaxants, such as methocarbamol and cyclobenzaprine are poorly tolerated by older adults due to anticholinergic side effects. Although cyclobenzaprine is a centrally acting muscle relaxant, structurally it is related to tricyclic antidepressants with similar ADEs. In addition, carisoprodol is metabolized to meprobamate, a controlled substance that can contribute to chronic dependency and misuse. The 2019 AGS Beers Criteria<sup>®</sup> strongly recommends avoiding these drugs.

### ***Nonpharmacologic Chronic Pain Management***

Non-pharmacologic modalities can be effective in managing chronic pain conditions, but are subject to variable coverage by insurers and application of a modality to a person's specific condition may not be supported by evidence. Nonetheless, the workgroup strongly recommends making at least several of the non-pharmacologic modalities available as safer alternatives to pharmacologic therapy. Some of these modalities may be accessed either through insurance mechanisms or through alternative resources such as community organizations (e.g., senior center programs, YMCAs). Cognitive-behavioral therapy and exercise have the strongest support for multiple chronic pain conditions. However, providers should consider which multimodal combinations of the following therapies may have added benefits beyond improving pain and function. For example, exercise and tai chi may help both pain and balance, thus reducing fall risk in older adults.

- Recommend:
  - Cognitive-behavioral therapy (CBT) for multiple chronic pain syndromes. Among the non-pharmacologic modalities, CBT has the strongest evidence of effectiveness.
  - Regular exercise. All older adults should do multicomponent physical activity that includes balance training, as well as aerobic and muscle-strengthening activities. Older adults should start at their current level of fitness, pain condition and recommendations from physical therapy and gradually increase activity to improve fitness. Remind patients that any physical activity is better than none.
- Consider:
  - Chiropractic care, including spinal manipulation, in-office and home-based therapeutic exercise, for pain reduction, medication reduction and functional improvement in musculoskeletal pain conditions.
  - Mindfulness-Based Stress Reduction (MBSR) to help patients become aware of and become less attached to thoughts that may increase pain-related suffering. While the time commitment required for a full program may not be feasible for all patients, incorporating mindfulness practice into daily living can help patients develop an awareness of how they respond to and live with chronic pain.
  - Regular tai chi practice for pain reduction in multiple chronic pain syndromes.
  - Yoga, either alone or coupled with other pain management strategies, such as MBSR, for pain reduction in multiple chronic pain syndromes and settings.
  - Heat therapy, both as adjunctive therapy with other complementary therapies (e.g., massage) and as a self-care measure at home, for pain reduction in multiple chronic pain syndromes in addition to other non-pharmacologic pain management strategies.
  - Acupuncture for pain management, either alone or in combination with other therapies, has been shown to be associated with a reduction in chronic neck pain, chronic low back pain, and for chronic migraine. In addition, emerging evidence supports the use of acupuncture for acute post-surgical pain.
  - Therapeutic massage, either alone or coupled with multi-modal pain management strategies, for pain reduction and functional improvement associated with specific pain syndromes commonly seen in the geriatric population.
  - Acceptance and Commitment Therapy (ACT) to help patients with chronic pain improve their functional status by accepting and learning to live with pain. This can be recommended as an adjunctive therapy with multidisciplinary pain management, as well as other complementary therapies for chronic pain (e.g., tai chi).

### ***Tapering or Deprescribing of Long-Term Opioid Therapy***

Tapering (reducing dosage or deprescribing) of long-term opioid therapy (LTOT) is possible and beneficial for many patients, but can be risky depending on how quickly the dose is being reduced and on the characteristics of the patients themselves. Potential risks of tapering include: illicit opioid use, opioid overdose, suicide, or other mental health crisis.

- Review the [2020 Bree Collaborative Guideline on Long-Term Opioid Therapy](#) that builds on the [HHS Guide for Clinicians on the Appropriate Dosage Reduction or Discontinuation of Long-Term Opioid Analgesics](#) and walks clinicians through:
  - Establishing a relationship: patient engagement
  - Assessment, and
  - Three possible treatment pathways:
    - Maintain and monitor
    - Tapering or discontinuation of opioids
    - Transition to medications for opioid use disorder (MOUD)
- As for all populations, tapering or deprescribing for older adults should be supported, gradual and as patient-centered as possible.
- Increase use of motivational interviewing approaches to draw on intrinsic motivations to taper. Refer to the [VA's Opioid Taper Decision Tool](#) for support.
- Talk to the patient and their family or caregivers about any negative or disappointing experiences with long-term opioid therapy and the potential benefits of an opioid taper.
- Ensure that tapers are negotiated with patients, and the speed of the taper does not exceed guideline-recommended taper rates..
- Ensure that all providers offer patients a variety of nonpharmacologic pain treatments.
- Ensure that all providers assess for opioid use disorder (OUD) and offer OUD/MOUD treatment to older adults, when indicated.
- If possible, connect the patient to others who have successfully tapered for peer-to-peer support.
- Assess each patient for anxiety, depression, suicidality, and insomnia. Refer to behavioral health, preferably integrated. Use CBT and non-addictive psychotropic medications, when indicated.
- Develop tapering/deprescribing plans that are collaborative and multidisciplinary, including collaboration with pharmacy (most feasible), behavioral health, and patient/caregiver. Follow patients closely during taper process.
- Consider transition to buprenorphine for patients at high risk who are unable or unwilling to taper regular opioids.

## Recommendations for Healthcare Delivery Sites and Systems

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Healthcare systems and health plans can adopt many policies and strategies to support safe, patient-centered, and evidence-informed opioid prescribing practices.

### *Expand Access*

- Provide adequate access to evidence-based nonpharmacologic modalities to manage pain, improve patient self-efficacy, and address sleep disturbances for older adults.
- Expand coverage for topical medications. Recommend transparency and ready accessibility of over-the-counter-medication benefits for individuals with Medicare advantage plans, especially those inclusive of over-the-counter topical and or oral analgesic currently covered.
- Connect older adults to community resources (e.g., senior centers, YMCAs) for nonpharmacologic strategies, such as exercise and tai chi, for both physical benefits and decreased social isolation.

### *Track and Monitor Prescribing*

- Track prescribing practices and drug-related adverse outcomes.
  - Develop a plan to monitor opioid-related adverse outcomes (e.g. falls, impaired cognition) and key prescribing/tapering metrics.
  - Use peer comparison reports and transparent benchmark data reporting that leadership can use to talk with prescribers.
- Set the expectation that providers will perform and document a standardized medication review, including reviewing the Prescription Monitoring Program (PMP), for all opioid prescribing visits.

### *Comprehensive Medication Review*

- Provide clinical decision support tools within the Electronic Health Record (EHR) that consider age, current medications, and comorbidities when prescribing medications to older adults to treat pain.
- Integrate the PMP into the EHR to identify older adults with co-prescribing of opioids and selected CNS-active drug classes for medication review. Be aware of need to coordinate care when the co-prescribing is from multiple providers.
- Establish the infrastructure for providing Medication Therapy Management, including annual Comprehensive Medication Reviews and quarterly Targeted Medication Reviews, for qualified Medicare patients.
  - Create the necessary documentation and billing infrastructure for ambulatory care pharmacists to provide Medication Therapy Management.
  - Facilitate integration of Comprehensive Medication Reviews and Medication Action Plans (MAP) in EHRs to improve efficiency of MTM services.
  - Integrate medical and pharmacy record and patient's information to ensure relevant and actionable recommendations.
- Provide adequate resources to perform comprehensive medication review during care transitions and at frequent intervals during follow-up outpatient visits.

### *Team-Based Care*

- Develop multidisciplinary, collaborative teams to support older adults with acute or chronic pain.

- Designate a responsible care coordinator (e.g., health service coordinator, nurse case manager) to facilitate smooth and safe transitions specific to the opioid and pain management plan.
- Consider including a pharmacist to co-manage older adults on opioids and to support tapering plans.
- Improve access to specialty care (e.g., pain management specialist or psychologist) for patients attempting to begin tapering, especially for patients unable to taper in primary care due to complex care needs.
  - Support close follow-up of patients to help ensure the taper is occurring safely over time.
  - Establish processes to enable warm handoffs of patients between primary and specialty providers when they are not located in the same system.
- Consider creating or collaborating with a multidisciplinary pain treatment program, such as a Structured Intensive Multidisciplinary Program (SIMP), to ensure access to intensive, multimodal treatment options, when indicated. SIMPs are outpatient programs that deliver regularly scheduled, daily, interdisciplinary care for the treatment of chronic pain. The program is typically 6 to 8 hours per day, 5 days per week for 2 to 4 weeks in duration. This can be a helpful venue for patients being tapered off long-term opioids.

### **Education**

- Educate older persons and their caregivers about non-opioid pharmacologic pain management options, including associated risks and benefits. This should include education on the potential dangers of polypharmacy and potential benefits of deprescribing. Ensure that written materials are legible for older adults with vision changes.
- Train or provide access to training for motivational interviewing and shared decision-making regarding health risks from long-term opioid therapy and reasons to taper.
- Educate providers and staff about pain management and other issues particular to the older adult patient population, including:
  - Age-related changes in pain perception and pain thresholds
  - Differential aging effects, resulting in the need for a more individualized approach
  - Responses to medication
  - Comorbidities (medical and psychological), resulting in polypharmacy
  - Psychosocial concerns
  - Importance of avoiding co-prescribing of CNS-active drugs

## Evidence

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### *Acute Prescribing*

Optimal pain control following surgery is important for functional recovery and for reducing the risk of post-surgical complications. Persistent postsurgical pain is best managed using a multimodal approach.<sup>6</sup> While opioids serve as the cornerstone for severe acute postoperative pain management, the need for persistent use is rare. Long-term opioid use often begins with treatment of acute pain. Though not a harm alone, long-term opioid use may increase the risk of harms if not appropriately managed (AHRQ). “The largest increments in probability of continued opioid use were observed after the fifth and thirty-first days on therapy; the second prescription; 700 morphine milligram equivalents cumulative dose; and first prescriptions with 10- and 30-day supplies.”<sup>7</sup> There is little high-grade evidence on risk of transition to long-term opioid use specific to advancing age by decade of life. A population study of opioid-naïve adults ≥65 years of age found 6% transitioned to persistent opioid use >90 days.<sup>8</sup> In a separate study, during a one-year follow-up period of Medicare beneficiaries new to opioids, 6.5% had transitioned to long-term opioid use.<sup>9</sup> Transition rates to long-term opioid use following minor and major surgical procedures appear similar (5.9% and 6.5% respectively), and it appears that individual patient characteristics were more important determinants than characteristics of the surgical procedure.<sup>10</sup> Similar rates have been reported for opioid-naïve patients remaining on opioid medication 12 months after sustaining fragility fractures of the hip, proximal humerus, or distal radius.<sup>11</sup> In comparison, 12-24% of patients with new back pain remained on opioids at 12 months, though this may, in part, represent chronic pain care.<sup>12</sup>

Multiple studies suggest a number of patient, prescriber, and system factors contribute to unintended, persistent opioid use.<sup>13,14,15,16</sup> Age is associated with persistent opioid use, particularly age greater than 50,<sup>17,18</sup> as is white race, higher income and Medicaid dual-eligibility.<sup>13</sup> Characteristics associated with long-term opioid use include low income, older, females, poor health, new/chronic back pain, opioid initiations with long-acting opioids or tramadol, prescriptions for other pain, sleep or antipsychotic medication and pre and/or post mental health issues.<sup>5</sup> Additional patient risk factors include comorbid posttraumatic stress, past or current nicotine use, past or current substance use disorder, social isolation and loneliness.<sup>19</sup> Persistent opioid use has also been associated with presence of diabetes, pulmonary disease and heart failure.<sup>20</sup> There is substantial variation in opioid use between states, even after accounting for patient and procedure characteristics associated with opioid use,<sup>21</sup> suggesting influence of individual prescriber behavior and local conditions. Prescriber characteristics potentially associated with prescribing of prolonged opioid treatment include personal attitudes, knowledge, beliefs and former training.<sup>22</sup> Systems level factors that may facilitate or reduce unintended prescribing include health organizations’ structure, culture and processes, prescriber education and legislative rules and policies.

Bio-physiologic changes that occur with aging, accumulation of comorbidities, co-prescriptions of medication, frailty, and psychosocial changes increase risk of opioid treatment. Pharmacokinetic changes and enhanced pharmacodynamic sensitivity (i.e., more pronounced effects at equivalent doses used in younger adults) occur with all opioids with age, leading to recommendations to start opioid

therapy with about 50% of the usual adult dosage.<sup>23,24,25</sup> Age-related pharmacokinetic changes are especially important to consider when using drugs with active metabolites. In the case of morphine, declining renal function may result in accumulations of the active metabolite, morphine-6-glucuronide, resulting in toxicity.<sup>26</sup> The American College of Surgeons Best Practices Guidelines for Acute Pain Management in Trauma Patients (2020) recommends a decrease in the initial dose of an opioid by 25% in 60-year-old patients, and by 50% for 80-year-old patients; but to administer at the same intervals.

Initiation of opioid and antiepileptic use and polypharmacy in older adults are significantly associated with increased risk of falling in meta-analyses.<sup>27</sup> A case series of more than 500,000 adults reported a nearly four-fold increase in the risk of fracture associated with periods of opioid exposure compared to non-use.<sup>28</sup> Though no differences were found by age, the associated risk for fracture was highest in the first seven days of opioid initiation (adjusted incidence rate ratio: 7.81, 95% confidence interval). Long-term postoperative opioid use is associated with decreased use of planned healthcare utilization, such as follow-up with medical appointments and participation in postoperative rehabilitation sessions.<sup>29</sup> Older adults with prolonged use of central nervous system depressant medication such as opioids report lower scores on self-reported health-related quality of life and have higher odds of having more problems performing usual activities.<sup>30</sup>

Exposure to opioids for the purposes of acute pain relief can progress to physical dependence and/or the onset of opioid use disorder (OUD). Older drug users are growing in number with many presenting for substance use treatment for the first time at the age of 50–70 years.<sup>31</sup> There are two distinct types of problem substance users among older people; “early-onset” and “late-onset” users. “Early-onset” refers to those who have a long history of substance use, who continue to use as they age, while “late-onset” includes individuals who develop a new OUD as elders.<sup>32</sup> As individuals age, they are less likely to obtain prescription opioids illicitly and more likely to obtain prescription opioids via the medical community.<sup>33</sup> One study reported that 40-50% of adults 50 and older who misused prescription opioids obtained those medications through physicians.<sup>34</sup> Alcohol use among older adults, including past-month binge alcohol, is also increasing, particularly among females, and is a significant safety concern for acute or persistent opioid treatment in older adults who may self-medicate loss, grief and loneliness.<sup>35</sup>

A range of comprehensive system-level strategies have been utilized in various settings to alleviate the problem of inappropriate prescribing of opioids.<sup>36</sup> These include organizational support, automated decision support systems, and tools for individual feedback. Systems level interventions studied to address the opioid epidemic at large include (1) state legislation and regulation, (2) prescription drug monitoring programs (PDMPs), (3) insurance strategies, (4) clinical guideline implementation, (5) provider education, (6) health system interventions, (7) naloxone education and distribution, (8) safe storage and disposal, (9) public education, (10) community coalitions, and (11) interventions employing public safety and public health collaborations. A 2020 Agency for Healthcare Research and Quality (AHRQ) evidence review focused on reducing harm associated with opioid use in older adults reported interventions aimed at use of screening tools to predict opioid-related harms, but none of these tools were tested in clinical practice to assess real-world results. Other studied interventions included use of the prescription monitoring program, multidisciplinary pain education for patients, an educational



pamphlet for patients, implementation of an opioid safety initiative, provision of patient information and pain management training for clinicians, a bundle of educational modalities for clinicians, free prescription acetaminophen, a nationally-mandated tamper resistant opioid formulation, and motivational interview training for nursing students.

Well-executed patient handoffs at all points of care transition, patient and caregiver education attuned to the patient's cognitive status, and care coordination provide opportunities for patient safety and prevention of unintended long-term prescribing. Opioid analgesics are one of the most common medications that account for discrepant medications at time of transfer from hospital to skilled nursing facilities, highlighting the importance of medication reconciliation at time of transition of care providers. One intervention that has been shown to be feasible and to promote faster return to preoperative opioid doses and definitive opioid cessation is a telephone-based motivational-interviewing intervention focused on providing opioid tapering reductions of 25% of the total opioid dose every seven days for patients with preexisting pain and opioid use who underwent orthopedic surgery.<sup>37</sup> However, many elderly patients experience cognitive impairment, memory loss and confusion that can be confounded by sight and hearing impairment. This can lead to problems with patient counseling and adherence to medication instructions. Medication hoarding is a problem for some older adults, with prevalence of hoarding behaviors increasing with age.<sup>38</sup> Thus, the caregivers' perspective is important for assessing medication and when providing instructions to discontinue and properly dispose of unused quantities of opioids.

In summary, there are insufficient data based on age, risk factors and specific acute pain conditions to recommend a specific strategy for prevention of persistent acute or postoperative opioid use.<sup>39</sup> Specific approaches used to reduce unintended transition from acute to long-term opioid use include prescribing limitations,<sup>40</sup> acceptance and commitment therapy delivered by a mobile phone,<sup>41</sup> motivational interviewing, development of a multidisciplinary transitional pain service to identify at-risk patients and optimize pain management upon discharge from hospital<sup>42</sup> and deprescribing algorithms.<sup>43,44</sup> The practicality of implementing these types of measures is limited, as is the likelihood of a single intervention being successful. However, the body of evidence as a whole suggests that enhanced care coordination between surgeons and primary care physicians allows for earlier identification of patients at risk for new persistent opioid use in order to prevent misuse and dependence<sup>45</sup> and to reduce the duration of acute opioid treatment. The majority of acute opioid prescribing should be ended within days for all patients but particularly for older adults due to numerous risks. For patients whose acute opioid tapering has not begun by six weeks after surgery or injury, Washington state [rules](#) require a provider to reevaluate the patient based on opioid effects on function and pain control and determine whether opioids should be continued, tapered, or discontinued. In addition to a clear understanding of the patient's treatment goals and expectations, comorbidities and medication risks, cognitive and functional status, a consistent prescriber and care coordination of community resources and family support are important for pain treatment in later life.<sup>46,47</sup>

### *Intermittent Opioid Use*

Very few published studies have specifically addressed the use of opioids intermittently for presumably chronic painful conditions, and even fewer have done so among older adults.

Paulozzi et al<sup>48</sup> assessed the risk of adverse health outcomes in a nationally representative commercial insurance database among those 18-64 years old who (1) took no opioids, (2) took opioids daily, and (3) took opioids less than daily. In this population of patients followed between 2008 and 2010, the proportion using opioids intermittently (43.6%) exceeded the proportion who used opioids daily (25%). Daily users accounted for 25.0%, less than daily users for 43.6%, and nonusers for 31.4% of opioid analgesic overdoses. These authors concluded that intermittent users are also at increased risk of overdose and that guidelines should address this subset of opioid users specifically.

Cooper et al<sup>49</sup> conducted an experimental trial among a small group of normal human volunteers using the cold pressor test. Over a five-day period, intermittent dosing with oxycodone was associated with greater subjective effects associated with abuse liability.

In a large prospective study at Group Health Cooperative, Turner et al<sup>50</sup> assessed patterns of opioid use among patients >45 years of age (mean age 63-65 years) with chronic non-cancer pain, and collected survey data on pain and activity interference at baseline, and at 4 and 12 months after opioid initiation. Patients with either no or low opioid use (opioid use once/week or less) reported better pain and pain interference than either the intermittent/lower dose group (5-<15 mg MED AND opioid use at least 2X/week) or the regular/higher-dose use group (>= 15 mg MED AND opioid use at least 2X/week).

In a study of critical illness admissions to the ICU in Ontario among patients >65 years of age, both chronic and intermittent opioid users had increased in-hospital mortality compared to non-opioid users; however the definitions of chronic vs intermittent use of opioids both included potentially high dose chronic use.<sup>51</sup>

### *Co-Prescribing Opioids*

Adverse drug reactions are a significant public health concern. According to the Centers for Disease Control and Prevention (CDC), adverse drug reactions result in approximately 1.3 million emergency department visits each year, with 350,000 patients requiring hospitalization.<sup>52</sup> It has also been estimated that hospitalized patients suffer over 2 million serious adverse drug reactions, resulting in over 100,000 deaths, annually. The associated cost of drug-related morbidity and mortality in the US is estimated to be \$136 billion, annually.<sup>53</sup>

Older adults are at increased risk for drug-related harm. One reason for this is that they often suffer from multiple chronic conditions, which may result in polypharmacy (i.e., use of five or more medications) and other potentially inappropriate medication use. In addition, age-related changes in pharmacodynamics and pharmacokinetics from factors such as reduced hepatic and renal function and altered body composition make older adults more vulnerable to drug-related side effects. CNS-active drugs, such as opioids, benzodiazepines, skeletal muscle relaxants and gabapentinoids, are especially

problematic for older adults due to a heightened risk for impaired cognition and falls.<sup>54,55,56</sup> As such, the 2019 AGS Beers Criteria<sup>®57</sup> recommends to avoid: (1) combining opioids with benzodiazepines because of increased risk of overdose, (2) combining opioids with gabapentin/pregabalin because of increased risk for severe sedation-related adverse events, including respiratory depression and death; and (3) to avoid combining three or more CNS-active drugs because of increased risk for falls and fractures. As such, prescribing for older adults poses unique challenges, and providers must use caution when prescribing for this population.

Polypharmacy involving CNS-active drugs leads to increased risk for impaired cognition, fall-related injury, and death.<sup>58,59,60</sup> This risk is especially high among older adults on opioids, for whom the use of CNS-active medications such as benzodiazepines, Z-drugs, gabapentinoids, and skeletal muscle relaxants add additional risk. The combination of opioids with benzodiazepines (increased risk of overdose) or gabapentinoids (increased risk of respiratory depression and death) may be inappropriate due to established risks.<sup>61,62</sup> Evidence suggests **comprehensive medication review** is a key strategy in limiting inappropriate polypharmacy and exposure to drug-related adverse effects in this population.<sup>63,64,65,66,67,68,69</sup>

Despite these concerns, polypharmacy remains high among older adults, with approximately 36% of community-dwelling older adults using at least five prescription medications and 15% being at risk for a major drug-drug interaction.<sup>70</sup> In a community-dwelling Medicare population, 13.9% of older adults with dementia met the criterion for CNS-active polypharmacy (defined as exposure to  $\geq 3$  medications for longer than 30 consecutive days from the following drug classes: antidepressants, antipsychotics, antiepileptics, benzodiazepines, nonbenzodiazepine receptor agonist hypnotics and opioids).<sup>71</sup>

Polypharmacy may be an even greater concern in the inpatient setting. One study found that, on average, hospitalized older adults who were discharged to skilled nursing facilities were prescribed 14 medications, 40% of which are associated with geriatric syndromes, such as cognitive impairment, delirium, falls, reduced appetite or weight loss, urinary incontinence and depression.<sup>72</sup>

Co-prescribing of opioids with CNS-active medications is increasing among older adults in the US. Co-prescribing of opioids and opioid potentiators, such as benzodiazepines, Z-drugs and gabapentinoids, among US adults  $\geq 65$  years increased from 29.6 per 1,000 people in 2007-2008 to 35.8 per 1,000 people in 2017-2018.<sup>73</sup> The most common type of co-prescribing across all age groups in 2007-2008 was an opioid and benzodiazepine, but this was replaced with an opioid and gabapentinoid combination by 2017-2018. A Canadian population-based study found that, among those who received opioid prescriptions, 24% also received concurrent prescriptions for a benzodiazepine or Z-drugs.<sup>74</sup> Higher co-prescribing occurred in patients  $\geq 65$ . Among a population of US veterans with Alzheimer's disease and related dementias and severe pain, one in three have an increased likelihood for a potentially inappropriate CNS-acting medication and/or opioids.<sup>75</sup> Another study in the Veterans Health Administration population found that 77% of veterans who received chronic opioid therapy also received psychotropics.<sup>76</sup> An analysis of data from the 2015 National Ambulatory Medical Care Survey

found that 40% of medical encounters that involved a gabapentinoid also had an opioid co-prescription, and predictors for this included age, peaking at age 55-64 years.<sup>77</sup>

A study of Medicare recipients insured by UnitedHealthcare found that the same provider, generally a primary care provider, prescribed 60% of concurrent use of opioids with other CNS-active medications (benzodiazepines, Z-drugs, muscle relaxants, gabapentinoids or antipsychotics) among older adults. In addition, concurrent use with  $\geq 2$  CNS-active medications increased the likelihood of falls/fractures by 18% and three or more ER visits by 21%.<sup>78</sup>

There are a number of potential approaches for reducing risk of harm from polypharmacy in older adults, including medication review, enhanced care coordination, patient education/outreach, and system-based efforts via EHR, combined with deprescribing of CNS-active drugs. Several studies have examined the impact of medication review. In one study, a team composed of a geriatrician, a resident physician, and a pharmacist used two screening tools (2 STOPP and START) to assess the drug therapy of 52 residents of a French nursing home. A total of 101 drugs were stopped and 34 drugs were started.<sup>79</sup> In a study at the second largest teaching hospital in the Netherlands, the authors assessed the differences between medication reviews performed by a geriatrician, versus those performed by a pharmacist, and reports generated by a clinical decision support system software. The clinical decision support system and pharmacist both noted potential problems in significantly more categories than the geriatrician did, while the geriatrician provided more remarks in the “medication without indication” category. The authors concluded that the geriatrician, pharmacist, and clinical decision support system provide different insights, so combining these efforts could create a more effective and comprehensive report on medication profiles.<sup>80</sup> Another study examined medication review performed by a pharmacist, using STOPP, a drug-drug interaction database (SFINX), and Renbase® (renal dosing database) in older patients in the emergency department. A geriatrician received the medication review and decided which recommendations should be implemented. The median Medication Appropriateness Index score decreased from 14 at admission to 8 at 30-days post-discharge ( $p < 0.001$ ), and during this same time, the number of patients with an Assessment of Underutilization Index score  $\geq 1$  was reduced from 36% to 10% ( $p < 0.001$ ). Thirty days after discharge, 83% of the changes were sustained and 72% of the patients had one or more medications discontinued.<sup>81</sup>

Toivo et al. assessed coordination of care to reduce medication risks in older home care clients in Finland. Home care nurses assessed medication risk during home visits and reported findings to the pharmacist, who prepared the cases for a triage meeting with the home care nurse and the physician. Each patient’s physician made the final decisions on medication changes. As a control, half of the participants with a recommended medication change had none of the medication changes actually implemented. This intervention showed a tendency for effectiveness in optimizing central nervous system medication use.<sup>82</sup> Another study of care coordination retrospectively analyzed drug information inquiries (DIIs) from prescribing clinicians of Programs of All-Inclusive Care for the Elderly (PACE) to pharmacists during routine patient care. More than half of the 414 DIIs (53.9%) were due to medication safety concerns, and 38.6% of the inquiries involved CNS medications. In response, pharmacists made 389 recommendations for drug therapy change, and prescribers implemented at least 79.3% of those

recommendations.<sup>83</sup> An investigation of pharmacist outreach to prescribers on patients with co-prescription of opioids and benzodiazepines among a Medicare population found that 66% of pharmacists' recommendations resulted in a medication discontinuation by the provider (40.2% benzodiazepines; 59.8% opioids).<sup>84</sup> Significant differences were seen in opioids discontinuation based on patient age ( $p < 0.001$ ) and prescriber geographical region ( $p = 0.0148$ ).

Martin et al. (2018) compared the effectiveness of a consumer-targeted, pharmacist-led educational intervention vs usual care on discontinuation of inappropriate medication among community-dwelling older adults. At 6 months, 106 of 248 patients (43%) in the intervention group no longer filled prescriptions for inappropriate medication compared with 29 of 241 (12%) in the control group. No adverse events requiring hospitalization were reported, although 29 of 77 patients (38%) who attempted to taper sedative-hypnotics reported withdrawal symptoms.<sup>85</sup> A newly emerging model for drug therapy assessment and intervention is the use of **targeted consultant pharmacist services**, who could serve multiple outpatient clinics within a healthcare system or provider group.<sup>86</sup>

To investigate the effectiveness of a system-based approach, Zaman et al. evaluated an electronic intervention to improve safety for patients co-prescribed chronic opioids for pain and benzodiazepines in the VA Health Care System. A clinical dashboard identified 145 eligible patients prescribed chronic opioids and benzodiazepines. Individualized taper and safety recommendations were communicated to prescribers via electronic medical record progress note and encrypted e-mail. The number of patients co-prescribed significantly decreased from 145/145 (100%) at baseline to 93/139 (67%) at 6-month follow-up. Mean opioid and benzodiazepine doses significantly decreased from 85 to 66 mg and from 16 to 13 mg, respectively, from baseline to 6-month follow-up. The proportion of patients prescribed  $\geq 100$  mg morphine equivalent daily dose significantly decreased from 39/145 (26.8%) at baseline to 26/139 (18.7%) at six months, and patients with a combination of opioid overdose education and naloxone distribution significantly increased from 3/145 (2.1%) at baseline to 46/139 by the end of study.<sup>87</sup>

#### ***Non-Opioid Pharmacologic Pain Management:***

Evidence for this section relies significantly on information published in the American Geriatrics Society (AGS) Beers Criteria.<sup>88</sup> This is a list of *Potentially Inappropriate Medications* (PIM) that are usually best avoided by older adults (65 years and older) in most situations or under certain circumstances. Initially published by geriatrician Mark H. Beers in 1991,<sup>89</sup> the 2019 AGS Beers Criteria<sup>®</sup> is updated every three years, last in 2019. The authors are an interdisciplinary expert panel of 13 clinicians (i.e., physicians, pharmacists, nurses). The literature search methods used for the 2019 update ACS Beers Criteria Literature Review are described in the article on p. 675.<sup>90</sup>

With a goal to improve the medical care for older adults by reducing the usage of PIMs that have an unfavorable risk benefit profile compared to alternative treatments, the 2019 AGS Beers Criteria<sup>®</sup> update focused on five criteria. These include:

- Potentially Inappropriate Medications for most older adults
- Medications that should be avoided in older adults with certain conditions

- Drugs to be used with caution in older adults
- Drug-drug interactions to avoid
- Dose adjustment based on kidney function

## **Medications for First Line Consideration**

### Acetaminophen

Acetaminophen (paracetamol) is a widely used first-line treatment for acute and chronic mild to moderate pain in older adults. In addition, it potentiates other analgesics. Acetaminophen is not included on the ACS Beer's list of potentially inappropriate medications for older adults, is generally believed to be safe and effective in older adults, and is included on the World Health Organization's List of Essential Medicines, the most effective and safe medicines needed in a health system.

Acetaminophen for management of pain related to osteoarthritis was previously recommended by the Osteoarthritis Research Society International (OARSI) guidelines. However, citing lack of evidence for efficacy, the most recent guidelines no longer recommend acetaminophen for management of OA pain.<sup>91</sup>

Maximum daily dose of acetaminophen is 4 grams per day for short-term use in older adults, and 2-3 grams per day for chronic use and for frail older adults.<sup>92,93</sup> Liver toxicity is a potential risk with chronic use at the higher dose range, especially with older adults. Therefore lower daily doses are advised.<sup>94</sup> In addition, dosage should be reduced by 50-70% in persons with hepatic insufficiency or alcohol abuse.<sup>95</sup> Patient education on the maximum daily dose is important to avoid liver toxicity, especially as acetaminophen is contained in combination with many prescription and OTC drugs.

### Topical Analgesics

Topical applications are an option to provide analgesia for frail elders, as there is minimal to no systemic absorption of the drug.<sup>96,97</sup> A potential drawback of topical analgesics is the need to apply directly to the painful area (in many cases, several times a day), which may be a challenge for some older adults with limited range of motion, functional skills, or cognition. Although found to have low effect sizes in management of pain from peripheral neuropathy, topical agents rate high for values, preferences and tolerability.<sup>98</sup>

A systematic review and meta-analysis of 229 studies on pharmacotherapy for neuropathic pain was authored by the Neuropathic Pain Special Interest Group of the International Association for the Study of Pain. It included reviews of several topical agents. A "weak recommendation" was given for capsaicin 8% patches (high quality evidence) and lidocaine 5% patches (low quality evidence).<sup>99</sup>

A 2021 review by Kocot-Kepska, et al. examined 23 randomized controlled trials (RCTs) and multiple case series and other reports on topical therapies, with a focus on mechanistic features of various therapies.<sup>100</sup> The highest quality data supported lidocaine 5% patches, capsaicin 8% patches and botulinum toxin-A injections for localized neuropathic pain conditions. The authors advocate the use of topical agents due to excellent safety profiles and patient tolerability, especially for frail patients.

Additionally, topical agents may target the underlying mechanisms of peripheral sensitization, which, if reduced early in the disease state, may reduce the development of central sensitization and overall worsening of the neuropathic pain condition.<sup>101</sup>

Lidocaine 5% patches were developed in the 1990's and are FDA-approved for postherpetic neuralgia.<sup>102</sup> Small studies have tested them in other conditions, including knee osteoarthritis and low back pain.<sup>103,104</sup> They are generally considered safe to use, with minimal systemic absorption.<sup>105</sup> Lidocaine can be measured at low levels in plasma following its application onto the skin however like most of the transdermal patches intended for local therapy resultant plasma drug concentrations pose low risk for systemic toxicities.<sup>106</sup>

Wolf et al. performed an analysis of 32 publications to determine the analgesia effectiveness and side effect profile of lidocaine 5% patches compared to pregabalin, gabapentin, capsaicin and placebo. They determined that lidocaine 5% patch is similar in efficacy to gabapentin, and more effective than capsaicin and pregabalin (when assessing change in pain from baseline). The lidocaine 5% patch had fewer clinically significant adverse effects than the systemic agents.<sup>107</sup> Although given a "weak" recommendation in the Finnerup (2015) meta-analysis, the authors indicate that topical agents such as lidocaine 5% patches may be a first-line therapy for older and frail adults who cannot tolerate systemic effects of oral therapies.<sup>108</sup> Lidocaine 5% patches require a prescription and are not always covered by insurance.

Little has been published on over-the-counter (OTC) analgesic topicals. Bioequivalence between products is tedious and rarely performed (i.e. 4% OTC topical lidocaine versus 5% prescription patch). A recent study of OTC topical Salonpas® Pain Relieving Patch (Hisamitsu Pharmaceutical Company, Inc, Japan) containing methyl salicylate 10%, menthol 6%, and camphor 3.1% reported statistical difference in reduction of pain severity and pain interference compared with control group at 14 days.<sup>109</sup> The use of topical salicylate-containing creams and ointments is widespread and can be confusing.

Capsaicin topical has been shown to be effective for neuropathic pain, such as postherpetic neuralgia, in multiple older studies. It reduces function of hyperexcitable nociceptors in the periphery, resulting in temporary destruction of peripheral nerve endings and reduction of pain.<sup>110</sup> Because it causes burning, topical cream application should be started with the lower OTC dose of 0.01% before increasing to the higher doses of 0.075% to 0.1%, applied four times a day. A high dose capsaicin 8% patch is also available by prescription. It is applied for 30 to 60 minutes, in clinic, after a topical local anesthesia pre-medication, and is effective for up to 3 months. In a RCT of 559 patients aged 18 to 90, suffering from peripheral neuropathic pain, capsaicin 8% patch was non-inferior to an optimized dose of pregabalin at 8 weeks.<sup>111</sup> The authors report the high dose capsaicin patch provided rapid onset of action, few systemic side effects, and greater patient satisfaction. The systematic review and meta-analysis of medications for neuropathic pain by Finnerup, et al. (2015) gave a "weak" recommendation for high-strength capsaicin and consider it for second-line therapy for neuropathic pain, and "inconclusive" recommendation for OTC topical capsaicin cream.<sup>112</sup>

Diclofenac 1% gel has been shown to be effective for treatment of knee osteoarthritis.<sup>113</sup> It is available OTC in the United States, and is applied three to four times a day for a week. Topical diclofenac patch 1.3% (Flector<sup>®</sup>, prescription only) is approved for acute sprain and strain. Additionally, some may report application site adverse effects such as dry skin, rash, or itching, which usually self-resolve when discontinued.<sup>114,115</sup> Topical diclofenac has been shown to produce a 4 to 16 fold lower systemic exposure than oral diclofenac with fewer gastrointestinal (GI) side effects.<sup>116</sup> While some amount of systemic exposure can be produced, topical diclofenac does not appear to inhibit platelet effects of aspirin therapy that many older adults may be receiving to reduce thrombotic events such as stroke and myocardial infarction.<sup>117</sup> Although adverse GI and renal side effects appear reduced with topical versus oral diclofenac, the US Food and Drug Administration (FDA) mandates that warnings be placed on all NSAID products about the risks of GI and CV adverse effects.

## **Medications to Use with Caution**

### Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

The 2019 AGS Beers Criteria<sup>®</sup> recommends avoiding chronic NSAID use unless alternative drugs cannot be used, and if used, gastric protective agents should be taken.<sup>118</sup> Likewise, the OARSI guidelines for management of knee, hip and polyarticular osteoarthritis indicate oral NSAIDs are not recommended in patients with frailty or cardiovascular comorbidities.<sup>119</sup>

### Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs)

Serotonin-norepinephrine reuptake inhibitors (SNRIs) such as venlafaxine and duloxetine are frequently used as an adjuvant with other analgesics and with some evidence of effectiveness in the management of a wide variety of pains, including neuropathic pain, low back pain, and fibromyalgia.<sup>120</sup> In older adults, however, SNRIs may lead to increased gastric adverse drug effects and may cause or exacerbate hyponatremia or SIADH. Therefore, the 2019 AGS Beers Criteria<sup>®</sup> lists a weak recommendation to avoid this drug class in older adults, especially those with eGFR <30 mL/min or who have a history of falls or fractures.<sup>121</sup> If utilized, there is a strong recommendation to use SNRIs with caution.

### Gabapentinoids

Gabapentinoids, such as gabapentin and pregabalin, are commonly used as adjuvant agents for management of neuropathic pain, low back pain, and fibromyalgia. However, these agents may be problematic in older adults, due to increased risk of falls and cognitive impairment. Dose reduction is advised, and is required if eGFR is <60 mL/min. Gabapentinoids continue to be recommended only in low doses by the 2019 AGS Beers Criteria<sup>®</sup> due to ataxia and falls. In addition, the 2019 AGS Beers Criteria<sup>®</sup> states: "...there is evidence of substantial harm when opioids are used concurrently with benzodiazepines or gabapentinoids. Such combinations are not recommended in frail elders."<sup>122</sup>

## **Medications to Avoid**

Despite robust evidence in older studies for reducing the pain of postherpetic neuralgia and painful diabetic peripheral neuropathy in older populations,<sup>123,124,125,126</sup> tricyclic antidepressants (TCAs) such as



amitriptyline, desipramine, and nortriptyline are associated with high risk for syncope, falls, fractures, cognitive changes, and bradycardia in older adults. Thus, the 2019 AGS Beers Criteria® has a strong recommendation against their use in older adults. Likewise, skeletal muscle relaxants, such as methocarbamol, cyclobenzaprine and carisoprodol are poorly tolerated by older adults, and the 2019 AGS Beers Criteria® has a strong recommendation against the use of these drugs.<sup>127</sup>

## ***Nonpharmacologic Pain Management***

### **Cognitive Behavioral Therapy (CBT)**

The [2015 AMDG Opioid Guidelines](#) reviewed CBT “There is good evidence that cognitive behavioral therapy is effective in reducing subacute or chronic low back pain and other chronic pain conditions, including chronic orofacial pain, chronic pain in children, fibromyalgia, persistent pain in the elderly, and inflammatory bowel disease.<sup>128,129,130,131,132,133,134,135,136,137,138</sup> The treatment of depression was shown to have significant benefits in terms of pain reduction, improved functional status and quality of life in a group of older individuals with depression and arthritis.<sup>139</sup> Progressive relaxation and biofeedback aimed at muscle relaxation do provide pain reduction but have not been shown to be superior to active exercise therapies in large cohorts for most outcomes (e.g., low back pain treatment).<sup>140</sup>

More recent reviews, including the two recent AHRQ reviews, support the broad use of CBT. In addition, a systematic review of psychological interventions, including CBT, in older adults with chronic pain found consistent but small benefits on reducing pain and catastrophizing beliefs, and improving pain self-efficacy for managing pain.<sup>141</sup> Results were strongest when psychological therapies were delivered in group-based settings. Further research on sustainability of benefits is recommended.

### **Exercise**

The 2020 the AHRQ updated systematic review evaluated multiple interventions for five of the most common chronic pain conditions including chronic low back pain, chronic neck pain, osteoarthritis, fibromyalgia, and chronic tension headache. The focus of the systematic review was on the durability of effect, defined as the persistence of the impact for at least once month after treatment completion.

For chronic low back pain, when compared with usual care, attention control, or placebo, exercise was associated with a small improvement in short-term function (10 trials). However, there was no effect on function in the intermediate (five trials) or long-term (one trial). The strength of evidence was moderate for short term while it was low for intermediate and long term. For pain, exercise was found to have moderate effectiveness in the short and long-term with a small effect at intermediate-term follow up (SOE: low).

For chronic neck pain, there was no improvement in pain or function in the short or intermediate term. In the long term, in 1 trial exercise was associated with a small improvement in function but no benefit in pain in 3 trials (SOE: low).

For knee osteoarthritis, in 8 trials, exercise was associated with a small improvement in function in the short term (SOE: moderate). While there was moderate improvement in function in the intermediate term in 11 trials and a small improvement in the long term in 4 trials (SOE: low). In the short term, in 8

trials, exercise was associated with a small improvement in pain (SOE: moderate). There was a moderate improvement in pain in the intermediate term and a small improvement in the long term (SOE: low).

For hip osteoarthritis, exercise was associated with a small improvement in function in the short term in 3 trials and in the intermediate term in 2 trials (SOE: low). For pain, there was a small improvement in the short-term but the results were not significant at the intermediate time period (SOE: low).

In addition to this condition specific data for pain, a randomized trial of a community-based exercise and behavioral program among older adults with reduced lower limb physical functioning demonstrated that over a 12 month period the intervention reduced functional mobility decline.<sup>142</sup>

A recent Cochrane review reveals that various types of exercise and Tai Chi reduce falls, likely by improving balance.<sup>143</sup>

### **Tai Chi**

Tai chi is a gentle form of mind-body exercise that may be an effective treatment for chronic pain conditions.<sup>144</sup> Recent RCTs have explored the efficacy of tai chi interventions for improving pain in individuals with conditions including osteoarthritis<sup>145,146,147,148,149,150,151</sup>, chronic multisite pain<sup>152,153</sup>, chronic lower back pain<sup>154,155,156</sup>, fibromyalgia<sup>157,158</sup>, neck pain<sup>159</sup>, heart failure<sup>160</sup>, depression<sup>161</sup>, arthritis<sup>162</sup>, and sedentary lifestyles<sup>163</sup>. In some trials, participants who receive tai chi interventions have shown pain reduction along with other benefits like improved strength and flexibility. Tai chi has been studied (for fall prevention, not pain reduction) and found to be safe in older populations.<sup>164</sup>

Some tai chi intervention trials also investigated potential mechanisms for how tai chi can reduce pain via secondary analysis, and found that beta-endorphin levels were decreased.<sup>165</sup> Participants reported psychological benefits, like more empowerment and sense of personal control,<sup>166</sup> and tai chi reduced pain catastrophizing<sup>167</sup> and increased mindfulness.<sup>168,169,170</sup>

Overall, recent RCTs and related secondary analyses assessing the efficacy of tai chi for pain reduction suggest that tai chi is effective as a nonpharmacologic treatment for many conditions with pain symptoms. Further investigation is needed to determine how tai chi can be used together with other pain relief treatments for optimal results. Links for evidence-based tai chi practice include:

<https://www.youtube.com/watch?v=jxpKT6Rr9i8&t=82s> and

<https://www.youtube.com/watch?v=tAOuEpa01j4>.

### **Yoga**

Yoga involves physical and mental exercises and can be used to improve strength and flexibility. Recent RCTs have found that the practice of yoga significantly improved pain for the following populations/conditions: older women (no specific pain condition),<sup>171</sup> people with chronic low back pain<sup>172,173,174,175</sup>, osteoarthritis<sup>176,177,178,179,180</sup>, chronic pain (no specific pain condition)<sup>181</sup> chronic neck pain<sup>182</sup>, musculoskeletal conditions in the workplace<sup>183</sup>, cancer<sup>184,185,186,187,188,189</sup>, and onsite at a treatment program for opioid use disorder.<sup>190</sup> Studies measure either the degree of pain interference with activities, severity of pain, or both. Some studies showed reduction in use of opioid medications.

Yoga practice was sometimes the only intervention, and sometimes coupled with other pain management modalities, such as mindfulness- based stress reduction. Even chair yoga showed pain reduction in older adults with arthritis.

A few studies did not show meaningful reductions in pain following yoga interventions. In a study comparing effects of 12-weeks interventions of music to movement or adapted yoga versus control in persons with multiple sclerosis, there were no significant group differences in pain interference.<sup>191</sup> Another trial compared qigong, yoga, and no intervention, and found no group differences for pain intensity in patients with chronic low back pain.<sup>192</sup> Most studies suggest that yoga could be used to support pain management for a variety of conditions and settings. Further research with larger and older populations are needed to confirm this effectiveness.

### **Chiropractic Therapy**

The strongest evidence for spinal manipulative therapy is for chronic low back pain in dozens of randomized controlled trials.<sup>193</sup> Recent observational studies and systematic reviews of large cohort studies on acute and chronic musculoskeletal pain have pointed toward the effectiveness of interventions utilized by Doctors of Chiropractic, which include spinal manipulative therapy, therapeutic exercise instruction, lifestyle education and nutritional advice.<sup>194,195,196,197,198,199</sup> Best practices have been established for the evaluation, management, and manual treatment of older adult patients using a 37-member interdisciplinary Delphi Panel.<sup>200</sup> Use of chiropractic care within the older population is widespread and has been a topic of research within the profession.<sup>201,202,203,204</sup> The older population makes use of a large variety of chronic pain management strategies, between 5-28 modalities, including chiropractic.<sup>205,206,207,208</sup> The safety of chiropractic has been studied in all age groups and was found to have no significant difference in adverse events between the treatment rendered by chiropractors and primary care physicians. Several large systematic reviews have looked at safety in the older population and found it to have similar risk to other nonpharmacologic treatments and often less risk than pharmacologic interventions.<sup>209,210</sup>

In a large systematic review and meta-analysis, chiropractic users were shown to have significantly lower (64%) odds of receiving an opioid prescription than non-users. Across multiple large observational cohort studies, chiropractic care appears to have a positive outcome in the reduction of opioid use across multiple population groups, including veterans and Medicare beneficiaries.<sup>211, 212, 213</sup> The reduction of the risk is greater among those who consult a Doctor of Chiropractic within the first 30 days of diagnosis.<sup>214,215</sup> Initial opioid prescription length has been shown to be the strongest risk factor for long term opioid use,<sup>216</sup> and chiropractic was found to have a significant effect in reducing long-term opioid use,<sup>217</sup> with early access to chiropractic care demonstrating the greatest effect.<sup>218</sup>

General practice patterns of Doctors of Chiropractic are aligned with evidence-based, guideline-concordant therapies which support their role on a multidisciplinary pain team.<sup>219,220,221</sup> There is data for both positive patient outcomes and healthcare system cost effectiveness that supports inclusion of chiropractors into health systems and insurance coverage to help end healthcare inequalities.<sup>222,223,224</sup>

Integrating Doctors of Chiropractic into primary care settings has been shown to lower monthly prescribing rates of opioid therapy.<sup>225</sup>

### **Acupuncture**

Research on acupuncture to treat a variety conditions which commonly occur in the geriatric population. However, the 2018 AHRQ systematic review and 2021 and 2022 surveillance update on noninvasive nonpharmacologic treatment for chronic pain found low to moderate strength evidence for treatment of chronic low back pain, chronic neck pain and fibromyalgia and the authors found insufficient evidence for other common pain conditions.<sup>226,227</sup> There are a number of studies with contradictory results due to methodological diversity and clinical variability.<sup>228,229,230,231</sup> Future high-quality primary studies that draw on all clinically relevant outcomes are needed.

There is evidence that function and/or pain improvements from acupuncture persist beyond the course of therapy for specific chronic pain conditions<sup>232,233</sup> with one meta-analysis finding only a small decrease, approximately 15%, in treatment effect at one year.<sup>234</sup> When use as a complementary treatment for chronic pain, acupuncture has been shown to decrease the usage of opioids.<sup>235</sup> There is also evidence that acupuncture-reduces opioid consumption after total knee arthroplasty<sup>236</sup> and reduces post-surgical opioid-related side-effects.<sup>237</sup> Acupuncture is considered safe and is well-tolerated with a low risk of adverse effects.<sup>238,239</sup> Across trials, adverse events associated with acupuncture were few in number with the most common complaints being pain at the needling site and muscle soreness that resolved soon after the treatment session ended.<sup>240</sup>

### **Massage**

Massage is a form of manual therapy with wide variations in treatment. As presented in the literature, the general terms “massage” and “massage therapy” are used most often. However, a number of studies specify a particular type of massage, such as Tai Massage or Swedish Massage. In addition, manual therapy and massage may be used in tandem or specified as individualized treatment modalities.

Massage has shown to be safe and effective for a number of chronic pain conditions, many of which are prevalent in the geriatric population. Recent RTCs and systematic reviews have found significant improvements in pain and function, with the largest body of evidence supporting massage as a treatment for acute, sub-acute and chronic low back pain,<sup>241,242,243,244</sup> chronic neck pain,<sup>245,246,1,5</sup> osteoarthritis of the knee,<sup>247,248,249,250,251,252</sup> and fibromyalgia.<sup>253,254</sup> Massage is tolerated well with adverse outcomes reported to be both temporary and mild when performed by a trained clinician.<sup>255,256</sup>

In addition to functional improvement and the reduction of pain, massage has a number of beneficial effects that may contribute to the overall well-being of the geriatric population, including the reduction of anxiety and depression,<sup>257</sup> reduction of stress, agitation, and pain in individuals with dementia,<sup>258,259</sup> reduction of constipation,<sup>260,261</sup> improved emotional health and social functioning,<sup>262</sup> improved health-related quality of life,<sup>263</sup> as well as improved activities of daily living.<sup>264</sup>

Massage may have a lasting effect beyond the treatment duration,<sup>265</sup> and the therapeutic benefits may be most pronounced when this treatment is included in a multi-modal approach to pain management.<sup>266,267,268</sup>

### **Mindfulness-Based Stress Reduction (MBSR)**

Mindfulness-Based Stress Reduction (MBSR) was developed in the late 1970s to help individuals with chronic health conditions cope with the impact of these conditions on their daily lives. MBSR helps people to become aware of their behavior patterns related to situations that are stressful and choose how to respond to them. A standard MBSR program consists of 8 weekly in-person sessions of 2 to 3 hours each, one full day retreat, and daily at home practice of 30 to 45 minutes. The techniques generally employed in MBSR are a combination of body scan, gentle yoga, and sitting meditation.

The use of MBSR for chronic pain management has been studied across a variety of conditions: non-specific chronic pain<sup>269,270,271</sup>, chronic lower back pain<sup>272,273,274,275</sup>, hip/knee arthritis<sup>276</sup>, fibromyalgia<sup>277,278</sup>, and migraine<sup>279</sup>.

While studies to assess the use of MBSR for chronic pain have included some older adults, very few studies have focused specifically on the use of MBSR in older adults. Across studies identified in this review, participants were largely self-identified as white and female. Authors noted the following challenges:

- The full 8-week MBSR course created time commitment challenges for participants. In-person courses also faced challenges related to needs for transportation, childcare, etc.
- Lack of participant engagement in daily home practice during and after the 8-week course.

Studies using a standard MBSR program (eight-week in-person course) showed significant improvement in pain acceptance<sup>280,281</sup>, pain bothersomeness<sup>282,283</sup>, and pain-related functional limitation<sup>284,285,5</sup>. However, improvement in pain severity/intensity<sup>286,287,288,289,290,291</sup>, pain self-efficacy<sup>292,293</sup>, and pain catastrophizing<sup>294,295,296</sup> varied by study. MBSR proved to be more effective than usual care, but demonstrated similar outcomes to Cognitive Behavioral Therapy (CBT) and other patient education programs. A computerized MBSR program<sup>297</sup> demonstrated significant improvement in pain acceptance, pain interference, and pain catastrophizing over baseline, but demonstrated similar outcomes to another computerized patient education program.

### **Heat Therapy**

The use of heat treatments for pain management has been explored across several conditions, including knee osteoarthritis<sup>298,299,300</sup>, rheumatoid arthritis<sup>4</sup>, neck pain<sup>301,302</sup>, knee pain<sup>303</sup>, chronic low back pain<sup>304</sup>, and chronic nonspecific pain.<sup>305</sup> Applying heat is thought to reduce pain by increasing blood flow to tissue and improving healing<sup>306</sup>. Heat treatments for pain management range from hot packs or pads on the skin, hot mud packs, dry heat treatment, and heated wraps. Results reflecting the efficacy of heat treatments for pain varied, and heat was never directly compared to placebo.

There is a range of efficacy results for heat use in pain management, and more research is needed to determine when and how best to utilize heat to benefit patients. Most studies found significant reductions in pain due to heat use, while a smaller number found no meaningful differences compared to controls. Many studies compare heat therapies with or against other alternative and complementary treatments. No studies compare heat directly to pain medications.

### **Acceptance and Commitment Therapy (ACT)**

Different from traditional CBT, centered on change in the content of patients' maladaptive thoughts and beliefs, ACT focuses on approaches of acceptance, mindfulness, and activation so that the impacts of the thoughts and beliefs on individuals can be changed for more adaptive behavioral performance.<sup>307,308</sup> Specifically, ACT aims to foster individuals' psychological flexibility by creating their "openness, awareness, and active engagement to living."<sup>309,310</sup> ACT helps people to focus on acceptance, mindfulness, and activation so that they can still live well by coexisting with negative experiences by incorporating values in the person's life. More specifically, for patients with chronic pain, ACT does not aim to eliminate or control the pain perception; but instead, it aims to modify the "relationship" with the thoughts by fostering their psychological flexibility and accelerating their behavior change which is in line with their life values.<sup>311,312</sup> ACT aims to improve the functional status of patients with chronic pain conditions, despite the pain experience.<sup>313,314</sup>

A growing body of literature highlights problems with treatment adherence and completion of the traditional weekly, in-person, psychotherapy.<sup>315,316,317,318</sup> However, a brief format of ACT is more accessible to surgical patients who have conflicting demands on their time. Three RCTs of brief ACT interventions in the prevention of post-surgical pain have been conducted.<sup>319,320,321</sup> One of the RCTs showed improved pain scores, and two of the RCTs showed both a reduction in pain and opioid use with the brief ACT intervention.

There is evidence of an association between several psychological flexibility processes, particularly pain acceptance, and adaptation to chronic pain.<sup>322</sup> However, there are relatively few studies on the relationship between pain acceptance and opioid misuse in chronic pain patients.<sup>323</sup> Associations have been found between higher pain acceptance and lower levels of anxiety, depression, pain catastrophizing, pain intensity, and disability.<sup>324</sup> Esteve and colleagues created and tested their hypothetical model in which pain acceptance would regulate pain sensations and pain-related thoughts and emotions, which would be related to opioid misuse. The results suggest that levels of anxiety, depression, and pain acceptance must be assessed before opioids are prescribed.<sup>325</sup> Moreover, pain acceptance has been associated with lower medication intake. This finding is relevant, given that there is a growing body of evidence to suggest that prescribed opioid medication misuse is alarmingly frequent in chronic pain patients.<sup>326</sup> In this regard, ACT may be a promising strategy for managing chronic pain patients.<sup>327</sup> However, upon review of several systematic reviews and metaanalyses conducted through 2020, previously published evidence regarding ACT was regarded as being moderate to very low quality, so investigators were very uncertain about benefits or lack of benefits of ACT for adults with chronic

pain.<sup>328</sup> Only a few studies compared ACT to active treatments and, while the evidence is promising for ACT in the treatment of chronic pain, further methodologically robust trials are required.

### *Tapering/Deprescribing Long-Term Opioid Therapy*

Tapering long-term opioid therapy is a potential strategy for reducing the risks associated with opioid use. Taper plans, however, bring their own risks related to the taper characteristics and who is being selected for the taper. Evidence from pilot projects demonstrates that multiple interventions are available to facilitate opioid tapering, but many bring implementation challenges, especially within primary care. Despite these challenges, developing taper plans in primary care is associated with an increased likelihood of sustained opioid taper.<sup>329</sup>

Several RTCs on the efficacy of interventions to promote tapering of long-term opioid therapy have been completed or are currently underway. In 2017, researchers at the University of Washington implemented a pilot trial of prescription opioid taper support (POTS) in patients without OUD.<sup>330</sup> In interviews with patients, researchers noted that the psychology of the taper was at least as important as the pharmacology, and they developed a taper plan in two phases: engagement and training. The intervention employed a combination of engagement videos, motivational interviewing, psychiatric consultations, and CBT-based skills training. This pilot project was extended to a multi-center primary care-based study of telephonic pain self-management training to support opioid taper and adapted for telephone administration to allow deployment in multiple Seattle-area Kaiser primary care clinics.<sup>331</sup> This second pilot project, named STRIPE (Strategies to Improve Pain and Enjoy Life) faced various challenges, including low consent rates, older patients with comorbidities, low taper initiation rates, and communication challenges among providers.

A third intervention study, the Facilitating Lower Opioid Amounts through Tapering (FLOAT) study out of Kaiser Permanente Northwest's Support Team Onsite Resource for Management of Pain (STORM) program demonstrated a reduction in daily opioid dose mean for 56% of participants.<sup>332</sup> This intervention employed a pain medicine physician, social worker, nurse, and multiple pharmacists to train and support primary care providers for opioid taper and pain management. Pharmacists were essential partners in the intervention, providing taper guidance and support to PCPs.<sup>333</sup> Interviews with participants in the STORM tapering program revealed that efficacy was influenced by PCP, patient, and health system perception of the importance of tapering.<sup>334</sup>

Additional pilot trials are ongoing. One study funded by PCORI examined the role of cognitive behavioral therapy and shared decision-making on taper plans. The interventions were delivered via Zoom, increasing recruitment and retention, but involved challenges with building relationships between prescribers and participants. Another ongoing study uses the EPIC electronic health record to deliver Best Practice Alert "nudges" to providers, a technique that has been proven effective to reduce antibiotic overprescribing.<sup>335</sup> The ongoing study involves five total "nudge" prompts that includes justification for opioid prescriptions for opioid-naïve patients and enhancing the option to choose a taper plan for chronic high-dose patients.<sup>336</sup>

While the above studies demonstrate the efficacy of tapering plans and examine potential interventions, taper plans are not without risk. There are risks associated with abrupt or short-sighted implementation of opioid dose-reduction or developing plans that are not patient-centered. Specific risks include an increased risk for emergency room or hospital encounters for drug overdose, withdrawal, or mental health crises.<sup>337,338,339,340</sup> Medicaid opioid reimbursements in states that are dose-limited have led to involuntary tapers.<sup>341</sup> There is broad professional opposition to involuntary tapers,<sup>342</sup> with professional pain treatment guidelines advising caution.<sup>343,344</sup> Updated recommendations from the Centers for Disease Control (CDC) and Department of Health and Human Services (HHS) explicitly recommend individualized tapering plans.<sup>345,346</sup>

Emerging claims data demonstrates the risks and benefits associated with tapering plans. Studies on state policies demonstrate that both strong state policies that involve dose limits and those without dose limits lower overall opioid use by 15% but do not change high-dose use.<sup>347</sup> However, one previous study in Washington showed that dosing policy lowered high-dose use in the Medicaid population.<sup>348</sup> An analysis of commercial insurance claims showed within-individual risk for acute substance-related morbidity events was higher for high-dose patients, but reduced when the dose was tapered.<sup>349</sup> Finally, an analysis of VA claims data demonstrated that new substance use disorder diagnoses did not differ between patients discontinuing vs. continuing long-term opioid therapy, yielding inconsistent results.<sup>350</sup>

Long-term opioid therapy destabilizes patients, both when starting opioid therapy and when tapering.<sup>351</sup> This is partially because opioids function as general stress-modulators, balancing corticosteroid and catecholamine effects, integrating aversive inputs and rewards to promote survival.<sup>352</sup> Most opioids support and mediate human social bonding and emotional function,<sup>353</sup> while exogenous opioids may disrupt those functions.<sup>354</sup> Fully adherent long-term opioid therapy patients may develop severe dependence distinct from OUD.<sup>355,356</sup> These patients may show poor pain control and poor physical and social function. With opioid taper, withdrawal symptoms are not limited to transient physical symptoms, but can include persistent insomnia, anxiety, anhedonia, irritability, and anger. Buprenorphine appears to be a good treatment option.

## Appendix A: Bree Collaborative Members

Member	Title	Organization
Susie Dade, MS	Patient Advocate	
David Dugdale, MD, MS	Medical Director, Value Based Care	University of Washington Medicine
Gary Franklin, MD, MPH	Medical Director	Washington State Department of Labor and Industries
Stuart Freed, MD	Chief Medical Officer	Confluence Health
Mark Haugen, MD	Family Medicine	Walla Walla Clinic
Darcy Jaffe, MN, ARNP, NE-BC, FACHE	Senior Vice President, Safety & Quality	Washington State Hospital Association
Karen Johnson, PhD	Director, Performance Improvement & Innovation	Washington Health Alliance



Norifumi Kamo, MD, MPP	Internal Medicine	Virginia Mason Franciscan Health
Dan Kent, MD	Chief Medical Officer, Community Plan	UnitedHealthcare
Wm. Richard Ludwig, MD	Chief Medical Officer, Accountable Care Organization	Providence Health and Services
Greg Marchand	Director, Benefits & Policy and Strategy	The Boeing Company
Kimberly Moore, MD	Associate Chief Medical Officer	Franciscan Health System
Carl Olden, MD	Family Physician	Pacific Crest Family Medicine, Yakima
Drew Oliveira, MD	Executive Medical Director	Regence BlueShield
Mary Kay O'Neill, MD, MBA	Partner	Mercer
Kevin Pieper, MD	Chief Medical Officer	Kadlac Medical Center
Susanne Quistgaard, MD	Medical Director, Provider Strategies	Premera Blue Cross
John Robinson, MD, SM	Chief Medical Officer	First Choice Health
Jeanne Rupert, DO, PhD	Provider	The Everett Clinic
Angela Sparks, MD	Medical Director Clinical Knowledge Development & Support	Kaiser Permanente Washington
Hugh Straley, MD (Chair)	Retired	Medical Director, Group Health Cooperative; President, Group Health Physicians
Shawn West, MD	Medical Director	Embright, LLC
Laura Kate Zaichkin, MPH	Director of Health Plan Performance and Strategy	SEIU 775 Benefits Group
Judy Zerzan, MD, MPH	Chief Medical Officer	Washington State Health Care Authority

## Appendix B: Workgroup Charter and Roster

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### The Bree Collaborative Opioids and Older Adults Workgroup Charter and Roster

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#### Problem Statement

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Opioid overuse poses challenges for all populations and especially for adults over 65 years of age due to psychological changes from aging causing individuals to have less predictable responses and specific risks such as from falls.<sup>1</sup> Opioid use also increases the risk of hospitalization and emergency department use for those over 65 and with a significant increase nationally in opioid misuse and inpatient care use coinciding with the opioid epidemic.<sup>2</sup>

#### Aim

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To reduce morbidity and mortality related to opioid use for adults over 65 years of age.

#### Purpose

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To propose evidence-based recommendations to the full Bree Collaborative on reducing opioid-related harms and disorders through screening, assessment of harms and benefits, medication reconciliation, pain management, and person-centered care.

#### Duties & Functions

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The workgroup will:

- Research evidence-based and expert-opinion informed guidelines and best practices (emerging and established).
- Conduct updated scientific review of pertinent literature
- Consult relevant professional associations and other stakeholder organizations and subject matter experts for feedback, as appropriate.
- Meet for approximately ten-twelve months, as needed.
- Provide updates at Bree Collaborative meetings.
- Post draft report(s) on the Bree Collaborative website for public comment prior to sending report to the Bree Collaborative for approval and adoption.
- Present findings and recommendations in a report.
- Recommend data-driven and practical implementation strategies including metrics or a process for measurement.
- Create and oversee subsequent subgroups to help carry out the work, as needed.
- Revise this charter as necessary based on scope of work.

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<sup>1</sup> Gazelka HM, Leal JC, Lapid MI, Rummans TA. Opioids in Older Adults: Indications, Prescribing, Complications, and Alternative Therapies for Primary Care. CONCISE REVIEW FOR CLINICIANS | VOLUME 95, ISSUE 4, P793-800, APRIL 01, 2020  
[www.mayoclinicproceedings.org/article/S0025-6196\(20\)30145-2/fulltext](http://www.mayoclinicproceedings.org/article/S0025-6196(20)30145-2/fulltext)

<sup>2</sup> Weiss AJ, Heslin KC, Barrett ML, Izar R, et al. Opioid-Related Inpatient Stays and Emergency Department Visits Among Patients Aged 65 Years and Older, 2010 and 2015: Statistical Brief #244. Healthcare Cost and Utilization Project (HCUP) Statistical Briefs. Rockville (MD)2018. [www.hcup-us.ahrq.gov/reports/statbriefs/sb244-Opioid-Inpatient-Stays-ED-Visits-Older-Adults.jsp](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb244-Opioid-Inpatient-Stays-ED-Visits-Older-Adults.jsp)

## Structure

The workgroup will consist of individuals confirmed by Bree Collaborative members, appointed by the chair of the Bree Collaborative, or appointed by the workgroup chairs. The chairs of the workgroup will be appointed by the chair of the Bree Collaborative. Bree Collaborative staff will provide management and support services for the workgroup.

Less than the full workgroup may convene to: gather and discuss information; conduct research; analyze relevant issues and facts; or draft recommendations for the deliberation of the full workgroup. A quorum shall be a simple majority and shall be required to accept and approve recommendations to send to the Bree Collaborative.

## Meetings

The workgroup will hold meetings as necessary. The program director will conduct meetings along with the chair, arrange for the recording of each meeting, and distribute meeting agendas and other materials prior to each meeting. Additional workgroup members may be added at the discretion of the workgroup chair.

Name	Title	Organization
Gary Franklin, MD, MPH (Co-chair)	Medical Director	WA Department of Labor and Industries
Darcy Jaffe, MN, ARNP, NE-BC, FACHE (Co-chair)	Senior Vice President, Safety & Quality	WA Hospital Association
Mark Sullivan, MD, PhD (Co-chair)	Professor of Psychiatry and Behavioral Sciences	University of Washington
Judy Zerzan-Thul, MD, MPH (Co-chair)	Chief Medical Officer	WA Health Care Authority
Carla Ainsworth, MD, MPH Floyd	Provider	Iora Primary Care - Central District
Rose Bigham	Patient Advocate	Washington Patients in Intractable Pain
Denise Boudreau, PhD, RPh, MS	Senior Scientific Investigator	Kaiser Permanente Washington Health Research Institute
Siobhan Brown, MPH, CPH, CHES	Senior Program Manager, Health Systems Innovation	Community Health Plan of Washington
Pam Davies, MS, ARNP, FAANP	Adult/Geriatric Nurse Practitioner	University of Washington / Seattle Pacific University
Elizabeth Eckstrom, MD	Division of General Internal Medicine and Geriatrics	Oregon Health Sciences University
James Floyd, MD	Internal Medicine	University of Washington School of Medicine
Nancy Fisher, MD	Ex Officio Member	
Jason Fodeman, MD	Associate Medical Director	WA Department of Labor and Industries
Debra Gordon, RN, DNP, FAAN	Department of Anesthesiology and Pain Medicine	University of Washington School of Medicine
Shelly Gray, PharmD	School of Pharmacy	University of Washington
Jaymie Mai, PharmD	Pharmacy Director	WA Department of Labor and Industries
Blake Maresh, MPA, CMBE	Deputy Director, Office of Health Professions	Washington State Department of Health
Kushang Patel, MD	Anesthesiology and Pain Medicine	University of Washington

Elizabeth Phelan, MD	Department of Geriatrics	University of Washington
Kara Shirley, PharmD, BCPS, BCPP, BCACP	Clinical Pharmacist	Community Health Plan of Washington
Dawn Shuford-Pavlich	Home and Community Services Division	Department of Social and Health Services
Angela Sparks, MD	Chief Medical Officer	United Healthcare
Steven Stanos, DO	Medical Director Swedish Pain Services Executive Medical Director, Rehabilitation and Performance Medicine	Providence Swedish
Gina Wolf, DC	Chiropractor	Wolf Chiropractic Clinic

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