Moving beyond opioid analgesics: Meet Anne
Anne was 45 years old and had 15 years of service as a delivery driver when she injured herself at work in 2004. While lifting a heavy package, she felt a pain in her lower back that immediately radiated down her right leg. She was diagnosed with radiculitis (pinched nerve) due to a herniated intervertebral disc. Over the course of her claim, Anne’s medical providers attempted to better control her pain by prescribing multiple medications, including six different opioid analgesics that eventually affected nearly all of her body systems and ultimately led to addiction.

No longer satisfied with the progress of her treatment, Anne went through detoxification as she wanted to stop taking medications altogether. Her time without opioid analgesics, however, was short-lived. Eight months later, she relapsed and once again started using opioid analgesics to treat her ongoing pain. Around that time, Anne’s workers’ compensation payer started working with a pharmacy benefit manager (PBM). The pharmacist at the PBM reviewed her medication therapy regimen and was concerned because the profile revealed potentially duplicative therapies, possible drug-drug interactions and medications that were likely being prescribed to treat opioid-related side effects. Instead of improving, Anne’s ability to function was declining. The pharmacist discussed the concerns with the payer and it was determined that an intervention was needed due to the serious risks to Anne’s health and well-being. A specialty-matched physician reached out to her physicians to discuss Anne’s treatment and potential alternatives that could help improve her recovery. Shown in Figure 1, the discussion included an extensive list of alternatives and suggestions for improved medication management.

This collaboration established the road map for a new, more optimistic pathway to recovery. Anne once again started weaning off of the opioid analgesic medications. Weaning is the process of gradually discontinuing a medication (rather than abrupt discontinuation) in an effort to prevent the precipitation of a medication-specific withdrawal syndrome. In conjunction with the changes in medication therapy, alternative treatments were also put into place to help manage her pain and reduce the associated effects that opioid analgesics were having on her various body systems.

Figure 1

Alternatives and suggestions for improved medication management

- Reduce and attempt to eliminate opioids
- Education
- Medication agreement
- Increase follow-up frequency
- Consult her state’s prescription drug monitoring program
- Urine drug testing
- Pill counts
- Cardiac evaluation
- Cautious use of NSAIDs
- Smoking cessation
- Detoxification
- Home safety evaluation
- Medication optimization
- Bowel management
- Monitoring bladder function
- Calcium and Vitamin D
- Medical equipment and supplies (i.e., walker and cane)
- Psychological intervention
- Physical and aerobic activity
Nervous System

The central nervous system, made up of the brain and spinal cord, is particularly vulnerable to the effects of opioid analgesics, including causing or worsening depression and/or sleep disturbances. Such is the case with Anne. While at one point she was prescribed a serotonin norepinephrine reuptake inhibitor (SNRI) for depression, Anne's continued pain was worsened by her underlying sadness and feelings of hopelessness.

As it turns out, Anne's depression and social isolation were fueled by the side effects of the opioid analgesics she was taking and their interactions with her other sedating medications, including skeletal muscle relaxants and hypnotics (sleeping pills). Her challenges with daytime sleepiness contributed to her unkempt appearance and made it difficult, even embarrassing, for her to be actively engaged with her family and friends. Her sleepiness and delayed response to normal stimuli even resulted in her falling several times.

Once the weaning started and she began to acclimate to a life without opioid analgesics, her sleep-wake cycles gradually started to improve. She no longer felt the need or desire to take her “sleeping pills” at bedtime because as her daytime sleepiness improved, her naps throughout the day ceased and she was ready to sleep at night. Additionally, Anne started using some of the sleep hygiene techniques that the peer-reviewing physician had suggested to help her maintain a healthy sleep cycle. These techniques included not eating heavy meals before bedtime and turning off the television before closing her eyes to help initiate and maintain restful sleep.

Surprising to Anne and her family, not only had her insomnia and depression started improving after the opioid analgesics were weaned and discontinued, but her pain started showing some small and gradual glimmers of improvement. Anne’s body had actually been having a negative response to the high doses of opioid analgesics she was taking, a condition called opioid-induced hyperalgesia. While her pain still does persist to a degree, it is not as severe or widespread as she had previously experienced.

To help manage her residual pain and periodic feelings of sadness, albeit both being less frequent and intense, her care team made a referral to a chronic pain psychologist. Choosing not to rely solely on medications for pain relief, Anne is learning cognitive behavioral therapy (CBT) techniques to allow her to more positively control her emotions and direct the behaviors that have surrounded her pain and her response to pain in the past. Changing this response cycle is important. For the first time in years, Anne is starting to gain control over her negative feelings and focus her thoughts more confidently on getting back to where her life left off before the injury. Her fears and decreased sense of self-worth have started to fade and each day seems a little brighter. With her continued improvement, Anne’s physician recommended that she join a support group consisting of patients who had once been addicted to opioid analgesics. While Anne has made substantial progress, she is not yet ready to make her illness public and declined the suggestion.
Coping with pain decreases energy. Lack of energy makes it hard to be active and stay in shape. Pain and anxiety make it hard to sleep. Lack of sleep worsens pain and decreases energy. Chronic pain can lead to depression, anger and anxiety. These feelings make coping with pain more difficult.

Most of us encounter periods of poor sleep from time to time. Social obligations, entertainment, household/job responsibilities and the many activities of daily living, can impede one’s ability to obtain the recommended seven to nine hours of nightly rest. The existence of aches and musculoskeletal pain are other factors that may make it difficult to fall or stay asleep throughout the night. As such, chronic pain resulting from a workplace injury is often associated with sleep disturbances.

These disturbances can lead to a total loss of sleep time or fractured sleep, which prevents the body’s completion of a sleep cycle, thus what little sleep is attained is not restorative. Although occasional bouts of insomnia can be frustrating and disruptive, they are relatively harmless to one’s overall sense of well-being. Chronic sleep loss, however is a more serious concern due to its influence on metabolism, mood and memory, as well as cardiovascular health and immune function.

Chronic sleep loss can also impair our ability to cope with pain and eventually lead to a state of decreased stamina. The lack of energy makes it difficult to be active, and the lack of exercise can exacerbate pain. The outcome is a vicious cycle in which a lack of sleep worsens pain, which in turn makes it more difficult to sleep.
Skeletal System

The large amount of opioid analgesics Anne had been taking placed her at an increased risk for bone thinning or osteoporosis, which leads to a greater risk of bone fractures. With Anne having suffered from multiple falls due to decreased balance and impaired cognition, there had been an even greater risk of fractures. Since she stopped taking opioid analgesics, her cognition and balance have steadily improved. The high frequency and unpredictable occurrences of falls she suffered, however, has left her feeling apprehensive about walking distances greater than merely from room to room. The pinched nerve in her lower back left her with some residual weakness of the right ankle and she still finds herself tripping over her right foot by the end of the day. With the risk of falls being a continued safety concern, her interdisciplinary care team decided to take precautions and recommended a cane for use on days seeming to be more difficult. Her physician also discussed the potential need for other modifications to the home, including grab bars in the bathroom and handrails on the staircase to help reduce the risk of future falls. Anne thinks the handrails would be a good idea but has declined any modifications to the bathroom.

Due to Anne’s continued fear of falling and her increased risk for osteoporosis, a bone mineral density study was also ordered to determine the current health of her bones. It turns out that Anne, while not yet at the level of osteoporosis, has started to develop some mild osteopenia, an early stage of bone loss. Realizing that Anne’s chronic exposure to opioid analgesics likely contributed to these findings, her physician decided to prescribe daily calcium and vitamin D supplements. More potent medications to prevent bone loss were also suggested but Anne elected to start with the supplements only.

Muscular System

The negative impact of opioid analgesics on Anne’s strength and endurance was compounded by her social isolation and depression. Recognizing the solution to this issue was complicated, her interdisciplinary care team had recommended a course of physical therapy that started out as an aquatic-based therapy program in a heated swimming pool. Initially focusing on improving her range of motion and decreasing her muscle tightness, the heated water also provided additional pain relief. Gradually, the aquatic therapy program progressed to land-based therapy where lumbar stabilization and core strengthening exercises continue to reduce Anne’s overall pain while some light stationary cycling improves her endurance. As a result, Anne has started to show even more improvements in her self-esteem and is starting to look forward to reintegrating back into her community with the ultimate goal, which she and her claim professional have discussed, being to return to the workforce in an appropriate position.
Respiratory System

The main cause of death following an opioid analgesic overdose is respiratory depression (the person stops breathing). As Anne became more aware of just how impaired she once was, both physically and cognitively, she is thankful that, throughout her care, she did not experience a more serious opioid-related consequence or overdose. And while she continues to use anti-anxiety medications for the occasional periods of anxiety and some as-needed muscle relaxants after “rough days,” she makes sure not to use these medications together, as she wishes to keep her risk of drug-drug interactions and overdose as low as possible. Furthermore, she is careful to avoid the use of alcohol with her medications.

Cardiovascular System

Anne struggled with chest pains throughout her recovery. Since many of the chest pains occurred with very little physical exertion, and sometimes even at rest, her physician initially considered these symptoms to be related to acid reflux or heartburn. However, Anne’s mother died at a young age from a heart attack. After learning that the risk for having a heart attack increases while taking opioid analgesics for prolonged periods of time, Anne’s physician became concerned about a possible underlying heart condition and referred her to a cardiologist. Following an abnormal stress test, a heart catheterization showed multiple arteries with incomplete, but still advanced blockage. With the placement of two stents in the affected arteries, better control of her blood pressure, and an effective smoking cessation program, Anne’s chest pains have resolved and many years have likely been added to her life.

Digestive System

Anne reported persistent discomfort from opioid-induced constipation, which is a common side effect of any opioid analgesic. Her physician had originally advised her to use stool softeners and laxatives as she felt she needed them. He had not realized just how severe her constipation had become, even to the point of continuous nausea with an increasing frequency of vomiting. Until then, her symptoms had been mostly attributed to opioid-induced nausea, another common side effect of opioids, for which anti-nausea medications were prescribed. However, at one appointment, Anne’s physician found significant tenderness in her abdominal area, even to the point that she refused further examination due to the pain. An X-ray of Anne’s abdomen showed large amounts of stool throughout her small and large intestines with findings suggestive of nearly complete impaction or obstruction. Along with the weaning from her opioid analgesics, this near impaction was cleared with multiple enemas and scheduled stool softeners. Additionally, her diet was changed to increase her fiber intake and she was encouraged to stay hydrated. Two weeks after the new recommendations were initiated, her bowels resumed working at a comfortable frequency and her discomfort dissipated.
Urinary System

Opioid analgesics can cause urinary system issues, such as urinary retention or failure to completely empty the bladder. This was the case with Anne. Since she stopped using opioid analgesics and changed her antidepressant to duloxetine from amitriptyline, a medication that may cause urinary retention, her bladder difficulties have improved. Even though her physician recognized this as a potential opioid-induced complication, he still advised that other possible causes of her bladder symptoms be excluded. After having undergone a urological evaluation to check for any other contributing comorbid conditions, Anne has been found to have no other neurologic or structural causes of her bladder symptoms. Just as a precaution, however, Anne was counseled by her physician to continue monitoring herself for any continued signs of urinary retention, such as pain in the lower abdomen or still feeling the need to urinate even after she has finished urinating.

Integumentary System

Other than an allergic reaction Anne experienced following the application of an opioid analgesic patch, she has had no further complications affecting her skin. She is, however, very clear in her communication with her physician that based on the response she had with the prior patch, she has no interest in medications being placed on her skin, whether a patch or topical cream.

Immune & Lymphatic Systems

Anne did not experience any of the potential immune or lymphatic system complications that can exist with the use of opioid analgesics. Had she been in her elderly years or had a chronic respiratory illness, she would have been at an increased risk of developing respiratory infections, including pneumonia.

Endocrine System

Opioid analgesics have the potential to affect the hormones of the body. Since hormones have a role in weight control and muscle health, this could have contributed to Anne’s increased weakness and multiple falls. Anne’s endocrine system has started to revert back to its normal physiologic state following cessation of the opioid analgesic therapy. However, concerned about her decreased level of endurance and unexpected bone thinning, her physician still recommends that she maintain the current doses of calcium and vitamin D supplementation along with future monitoring. Her newly-established physical therapy program and weight-bearing activities will also improve Anne’s overall bone health.
Reproductive System

Connected to the endocrine system through hormones, Anne’s reproductive system was significantly affected by the opioid analgesics she had been taking. The relationship with her husband had become estranged, not only because he felt like he had assumed a caregiver role for his wife, but also because of the loss of intimacy between them. Since the opioid analgesics are no longer affecting her hormone levels and the persistent nausea from chronic constipation has improved, Anne and her husband are starting to rediscover the relationship they shared prior to her injury. The return of this connection also benefits Anne’s self-esteem and contributes to an overall more positive outlook.

Collaboration is Key

While many people are aware of the risks of misuse, abuse, addiction and even overdose that accompany the use of opioid analgesics, not everyone understands the profound effects they can have on nearly every body system. Through the collaborative efforts of the payer, PBM, members of her interdisciplinary care team and family, not to mention Anne’s active participation in her recovery, a safer, more efficacious and cost-effective medication therapy ensued. Simultaneously, the addition of non-pharmacologic therapies, such as physical and aquatic therapy and CBT, helped restore her physical and emotional function. This allowed Anne to successfully wean off of the opioid analgesics and improve her overall health and well-being; ultimately achieving a better outcome.
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