



Opioid analgesics have the potential to affect every major body system.

Meet Anne.

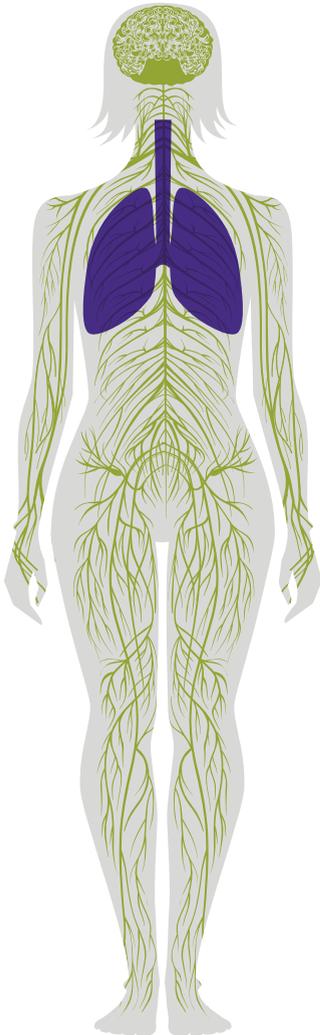
This is Anne.

The side effects of opioid analgesics often outweigh the benefits of their pain-relieving properties. To illustrate these effects, we share the story of Anne, a 45-year-old woman who injured her back while moving a heavy box at work. Anne was diagnosed with a lumbar radiculopathy due to a herniated intervertebral disc. She experienced immediate low back pain that radiated down her right leg with associated numbness and tingling.

Over the course of her claim, her medical providers attempted to better control her pain and worsening depression with multiple medication classes, including muscle relaxants, nonsteroidal anti-inflammatories, benzodiazepines, antidepressants, anti-convulsants, topical anesthetics and opioid analgesics.

While she experienced minimal to no lasting pain relief with the medications being prescribed, she developed unpleasant side effects and significant functional setbacks as a direct result of the six opioid analgesic medications, some long-acting and some short-acting, being prescribed to her. Looking over her case, she had either developed or was at a heightened level of risk for opioid analgesic-related side effects involving every major body system.





RESPIRATORY SYSTEM

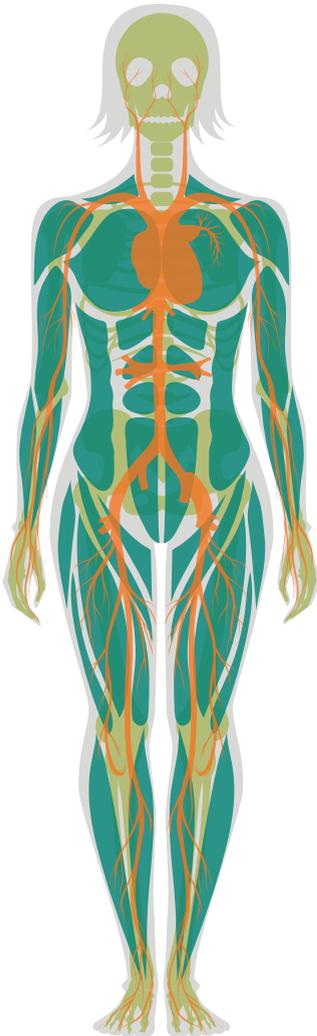


Due to the number of opioid analgesics and potentially deadly combination of muscle relaxants and opioid analgesics, Anne was at a high risk of overdose and respiratory depression. Opioid analgesics decrease the brain's ability to sense high levels of carbon dioxide in the blood and also diminish the amount of air breathed in by the lungs. This is the most common way that people die from opioid overdose—their breathing slows down, their breathing stops and they ultimately suffocate.

NERVOUS SYSTEM



The central nervous system, made up of the brain and spinal cord, is particularly vulnerable to the effects of opioid analgesics. For instance, opioid analgesics have been found to increase the likelihood of either developing depression or further worsening preexisting depression. Depression is often, unfortunately, accompanied by social isolation and sleep disturbances, either insomnia or excessive daytime sleepiness. One physician's examination of Anne revealed that, "her speech was slurred and it was hard to keep her awake to carry on a conversation." Furthermore, opioid analgesics have the potential to over-sensitize the brain, leading to a condition where patients have actually had increased amounts of pain. This condition is called opioid-induced hyperalgesia. Finally, we cannot forget about the risks of dependence and addiction that frequently accompany opioid analgesic use.



SKELETAL SYSTEM

The body's skeletal system is in an almost constant state of turnover. That is, older bone tissue is broken down and stronger bone tissue is formed, resulting in stronger bones. Opioid analgesics have been found not only to impair this process by having a direct effect on bone-generating cells, called osteoblasts, but also negatively affect the hormones of the body that help regulate bone growth. Anne's cognition was significantly impaired by her medications, causing her to fall multiple times. While she did not directly sustain any fractures, she was at a much higher risk for bone injury as a result of the opioid analgesics being taken.



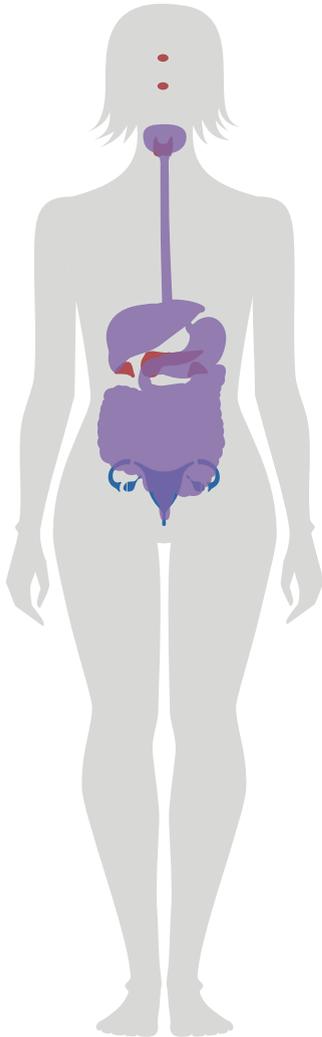
MUSCULAR SYSTEM

Anne had developed depression and excessive fatigue from her pain medications, specifically the opioid analgesics, to the point that she was no longer an active woman. Most of her days were spent reclining in a chair at home to the point that her muscles became weak and her overall endurance declined. Beyond the resultant inactivity, opioid analgesics affect the body's hormones and can further negatively affect muscle mass and strength.



CARDIOVASCULAR SYSTEM

Anne had been experiencing chest pains during her recovery. While she was never diagnosed with actually having a heart attack, some opioid analgesics, including morphine and meperidine, have been associated with a small increased risk of myocardial infarction or heart attack. The risk of heart attack was also found to be increased in patients who were taking multiple opioid analgesics at one time, as Anne was doing.



ENDOCRINE SYSTEM



Opioid analgesics have the potential to affect the hormones of the body. Since hormones have a role in weight control in addition to bone and muscle health, Anne's risk of weakness increased resulting in multiple falls around her house. Decreased bone and muscle health placed her at a higher risk of not only falls, but also bone fractures.

REPRODUCTIVE SYSTEM

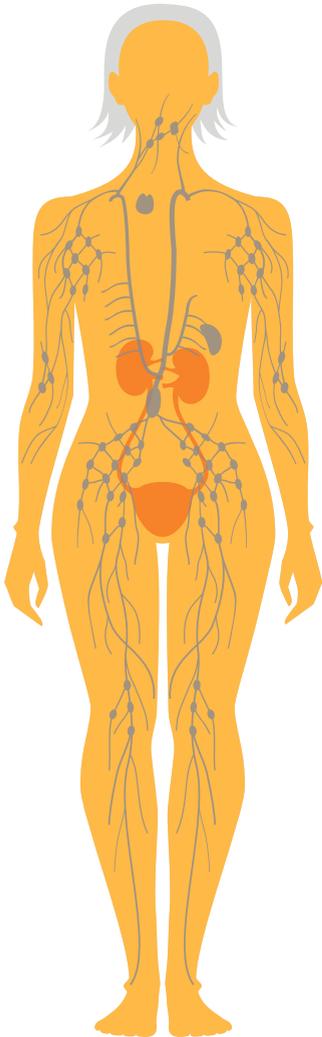


Due to the effects that opioid analgesics can have on the endocrine system and the body's hormones, both men and women are at increased risk for reproductive system abnormalities. Women, for instance, are more prone to menstrual irregularities and carry a two-times higher risk of having children with birth defects. Men and women are both at higher risk for sexual dysfunction and problems with intimacy.

DIGESTIVE SYSTEM



Some of the most commonly known side effects of opioid analgesics relate to the digestive system. People taking opioid analgesics will often complain of nausea, vomiting, and constipation. These symptoms are caused by several mechanisms. Opioid analgesics increase the amount of time it takes for food to pass through the stomach, leaving a feeling of fullness long after meals. Slower digestion can lead to constipation. Opioid analgesics can also have a direct effect on the vomiting center of the brain. In Anne's case, the opioid analgesics she took caused extreme difficulties with constipation.



URINARY SYSTEM



The ability to void or urinate can be affected by opioid analgesics as it was in Anne's case. She had developed a condition called urinary retention or failure to completely empty her bladder. Opioid analgesics can decrease the sensation of a full bladder by limiting the amount of discomfort that is noticed. They can also cause increased resistance to urine flow out of the bladder. Both situations, as well as more complicated spinal cord involvement, can result in urinary retention that, when left untreated for long periods of time, can contribute to urinary tract infections and kidney damage.

INTEGUMENTARY SYSTEM

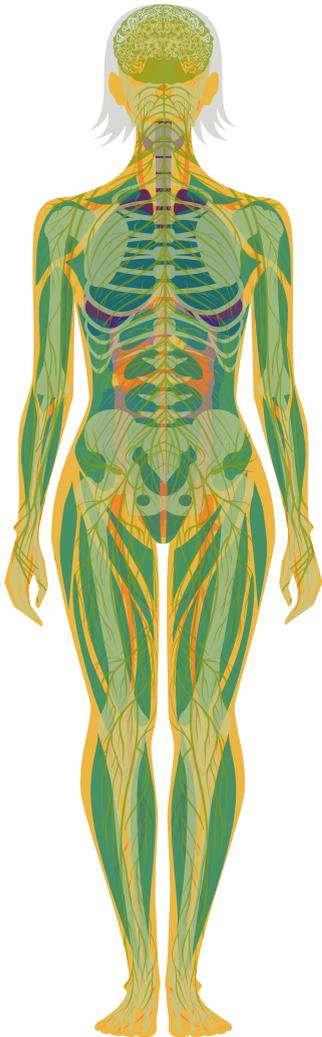


The Integumentary System, predominantly comprised of the skin, can be affected by opioid analgesics and medications applied to the skin. In Anne's case, one of the opioid medications she used comes in the form of a patch that is directly applied to the skin to allow for slow opioid absorption over time. The patch she used caused an allergic reaction and resultant rash that required the medication to be discontinued.

IMMUNE AND LYMPHATIC SYSTEMS



Immunodepression or a poorly functioning immune system places people at higher risk of having an infection. Some opioid analgesics, including morphine, fentanyl and codeine, have been found to increase the risks of pneumonia in elderly patients.



Understanding and recognizing the potential side effects of opioid analgesic medications aids in the recovery of injured workers. Teaming with a pharmacy benefit manager (PBM) could have helped proactively identify the medication complications that Anne was experiencing and reduced the impact of each condition she had, as well as reduced the risk of the side effects she had fortunately not yet experienced.

Anne's medications were causing her to have excessive daytime sleepiness and was isolating her from her family. Her level of depression was disabling and was likely being worsened by the opioid analgesics she was taking. She had additionally been having problems with nausea, constipation and difficulty with urinating—all of which likely further worsened her depression and social isolation.

Through the application of our patent-pending analytic insight, veteran clinical expertise, operational flexibility and the industry's most comprehensive networks, we would not only have identified the aforementioned clinical concerns, but also worked with the claims professional managing the claim to take action. This undoubtedly would have yielded a better outcome—not just financially because of cost savings from the elimination of unnecessary treatment, but clinically in response to Anne receiving safer, more efficacious therapy.

Our clinical program

While opioid analgesics have an important place in medication therapy for the treatment of pain, careful consideration of the risks and benefits associated with their use must occur. The clinical tools and expertise we offer work in partnership with payer clients to promote safe and effective treatments for the compensable condition(s) associated with the claim, while remaining consistent with the business rules of the payer and any applicable regulations. By thinking of pharmacy utilization as a continuum (prospective, concurrent and retrospective), it can be easier to understand the interaction of the various inputs of our program in the effort to manage pharmacy utilization and cost.

Prospective. Data is reviewed surrounding past payer experiences, global trends in treatment, new medications being released, existing medications being used for new conditions or treatments, state of jurisdiction requirements and the types of clients served. Distilled down to formularies, drug utilization review criteria and business rules, these parameters and information help us forge the future care strategies that will guide pharmacy and payer decisions in the management of the pharmacy claim. In workers' compensation, while these may contemplate the global population of injured workers, our strategies must be sufficiently flexible to address the unique circumstances of the individual injured worker.

Concurrent. We employ utilization management technology to capture the point-of-sale transactions based on the prospectively-defined care strategies. This data fuels analytic models, allows for greater visibility into the injured worker's medication therapy regimen and lends the opportunity for clinical intervention where needed. Meanwhile, the dispensing pharmacist is alerted to relevant information about the injured worker that may assist in more appropriate dispensing of the medication, in real-time.

Retrospective. Clinicians analyze the pharmacy claim, identify intervention opportunities and reveal trends that lead us to modify and continuously improve the prospective utilization management plan to achieve better outcomes for the payer, the employer and, most importantly, the injured worker.

The greater the synchronization throughout the care continuum, the better the decisions made in the claim; better decisions lead to better outcomes.



About Optum for Workers' Compensation and Auto No-Fault

The workers' comp and auto no-fault division of Optum collaborates with our clients to deliver value beyond transactional savings while helping ensure claimants receive safe and effective clinical care. Our innovative and comprehensive medical cost management programs include pharmacy, ancillary and managed care services from first report of injury to settlement.

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