# Pain patch

## *Pain control with the fentanyl patch*

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*Anne was a 68-year-old woman with pancreatic cancer. She had epigastric abdominal pain that had responded well to immediate-release morphine and was using 5-mg tablets approximately 4 times daily. A friend told her about a "pain patch" that worked well. Anne, who disliked taking pills and was interested in the convenience of changing a patch only every 3 days, made an appointment to see her family physician to discuss the transdermal fentanyl patch. She decided to try it and was started on a 25-µg patch every 3 days. After day 3 of using the patch, Anne's son informed her physician that his mom had become somnolent, confused, and had fallen. She was taken to the emergency department and was admitted. Her patch was discontinued and she was given 650 mg of acetaminophen to take by mouth every 4 hours as needed for pain. Three days later, she was having a great deal of pain and was neither somnolent nor confused. The son was understandably very concerned about his mom's condition.*

It is common for patients to ask about pain patches. Up until quite recently, the 25-µg dose was the smallest available via patch. Even though the 12-µg patch is approved for sale in Canada, it is not always available at every pharmacy nor universally covered by provincial drug plans. (Note: Although this patch delivers 12.5 µg/h of fentanyl, it is called "12" to avoid confusion with 125 µg/h.) Patches should not be cut nor occluded to obtain a lower dose. If they have not been using opioids, patients should not be given even the lowest doses of fentanyl via patch.[1] There are various examples where tragic consequences resulted when opioid-naïve patients were started on low doses of the transdermal fentanyl patch.[2]

It is also not always simple to convert from an oral opioid to the transdermal fentanyl patch. To rotate to the fentanyl patch from another opioid, it is best to determine the equivalent oral morphine dose that the patient is taking. Moving from the total daily oral morphine equivalent to the correct dose of transdermal fentanyl can be a challenge. One method to determine the dose of the patch is to use the conversion table in the *Compendium of Pharmaceuticals and Specialties* (*CPS*), which states that 60 to 134 mg of oral morphine is equivalent to a 25-µg patch. This range is very broad owing to the variability in absorption among patients[2] and could lead to underdosing.[1] The conversion table in the *CPS* is recommended only for converting to the fentanyl patch and *not* from the patch to an alternative opioid, as one could overestimate the dose of the new opioid.[1]

There are many other conversion methods. In one alternative method, Breitbard recommends using 2 mg of oral morphine as equivalent to 1 µg of fentanyl[3]; therefore, 50 mg of oral morphine within 24 hours is equivalent to a 25-µg fentanyl patch. Another commonly used conversion is to equate 100 mg of oral morphine to a 25-µg fentanyl patch.[2]

No matter which method is used, the most important point to remember is to start low and go slow. This is especially true for the frail elderly and debilitated patients. Pharmacokinetics might be altered because of minimal fat stores, muscle wasting, altered clearance rates, improper administration, and nonadherent patches.[1] In addition, absorption of fentanyl might be increased in a hot environment. It is also important to remember that when titrating the dose, the shortest titration period is 3 days because of the extended time required for the plasma concentrations of the drug to stabilize.[4]

*Anne was restarted on oral morphine and was using approximately 30 mg of oral morphine daily. She was eventually started on a 12-µg patch. After being discharged from the hospital, Anne did very well for 6 weeks, then her pain began to increase. She used acetaminophen as a breakthrough analgesic when the pain intensified, but it did little to reduce the pain.*

## Breakthrough medication

It is important for patients using the fentanyl patch to be given breakthrough pain medication, as well. Any opioid in the correct dose can be used as a breakthrough or rescue dose. It is not uncommon to use a breakthrough dose that is approximately 10% of the daily opioid dose.[5] In this case, Anne uses a 12-µg patch, which is approximately equivalent to 12 mg of subcutaneous (SC) morphine within 24 hours or 24 mg of oral morphine within a 24-hour period (using the Breitbart formula previously mentioned).[3] This would be approximately equal to 2.5 mg of oral morphine.

*The breakthrough 2.5-mg dose of morphine every 1 hour as needed greatly helped Anne. At first she used only 1 to 3 breakthrough doses a day. Unfortunately, as her disease*

*progressed, so did her pain. Once she required up to 10 breakthrough doses a day, she called her physician.*

The number of breakthrough doses can help to determine when a strength of the fentanyl patch should be increased. For example, Anne used 25 mg of breakthrough oral morphine within 24 hours. This dose is equivalent to another 12 µg of fentanyl delivered via patch, which would now make her likely to tolerate a 25-µg patch. It is important to realize that, when changing the dose of the patch, it takes 13 to 24 hours for the fentanyl to reach the new therapeutic drug level. It is also important to remember that, when the patch dose is increased, the breakthrough dose will also need to be increased. Once Anne was on the 25-µg patch, her breakthrough dose would also require adjusting. The 25-µg patch is equivalent to 50 mg of morphine by mouth in 24 hours. Ten percent of 50 mg is 5 mg, so a reasonable new breakthrough dose would be 5 mg every 1 hour as needed.

*Anne did quite well again for a few weeks, then she began to deteriorate. The family physician now visited her at home for terminal care.*

## Transition to end-of-life care

Fentanyl patches are not ideal for terminal care. As discussed earlier, it takes a relatively long time to change the dose. More rapid adjustments might be necessary in the last hours to days, so you'd likely start SC opioids (morphine or hydromorphone).

Anne was now using a 25-µg patch and was using 20 mg of morphine breakthrough medication by mouth each day. In order to assess her need for SC morphine, we calculated her total daily dose of morphine. The 25-µg patch is equivalent to 25 mg of SC morphine in 24 hours. The 20 mg of breakthrough medication by mouth is equivalent to 10 mg of SC morphine. Therefore, in total, Anne required 35 mg of SC morphine in 24 hours.

Once the fentanyl patch is discontinued, it is best not to start the continuous dose of morphine for 18 to 24 hours, as the fentanyl continues to be released from the SC fat stores into the blood for up to 24 hours. Once the fentanyl is removed, SC breakthrough medications can be used until the standing dose of morphine is initiated between 18 and 24 hours after patch removal. The morphine can be delivered by intermittent SC injections or by continuous SC injections. With each method, an SC breakthrough medication needs to be made available.

*Anne was very comfortable on intermittent SC injections of morphine (6.0 mg every 4 hours and 3.0 mg every half hour as needed for breakthrough). She died peacefully approximately 2 weeks after SC injections were initiated.*

**BOTTOM LINE**

- Patients who have not been using opioids should not be started on a fentanyl patch.
- When rotating to a fentanyl patch, it is important to start low and go slow, especially in elderly or debilitated patients.
- The shortest titration period is 3 days because of the extended time required for the plasma concentrations of the drug to stabilize.
- Fentanyl patches are not ideal for end-of-life care, especially when there is uncontrolled pain.

**POINTS SAILLANTS**

- Il ne faut pas commencer l'administration du timbre de fentanyl aux patients qui n'ont pas encore utilisé des opioïdes.
- Lorsqu'on passe à un timbre de fentanyl, il est important de commencer à faible dose et lentement, surtout chez les personnes plus âgées et affaiblies.
- Le dosage le plus court est de 3 jours en raison de la longueur de temps nécessaire pour que les concentrations plasmatiques du médicament se stabilisent.
- Les timbres de fentanyl ne sont pas ce qu'il y a de mieux pour les soins en fin de vie, surtout lorsque la douleur n'est pas contrôlée.

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### Competing interests

*None declared*

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