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MAKE PAIN MANAGEMENT 'PRECISION' MEDICINE
Change is essential to end the opioid crisis

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Given that the "opioid epidemic" appears to be an outgrowth of over-reliance on opioids to manage pain, it should be obvious that better pain management is key to bringing the epidemic under control.

But the opioid epidemic has become a complex social phenomenon, and solutions need to be a comprehensive combination of interventions. These include (1) control of the manufacture, distribution, prescription, and illegal sale of drugs, (2) use of preventive interventions at both the community and individual levels, (3) improved access to effective treatment of addiction, including treatment with medications, (4) more widespread use of life-saving emergency interventions by first responders, and (5) **improved pain management.**

The challenge regarding pain is how to manage it without creating risk of addiction and its consequences.

We know that there are quite a number of pharmaceutical and non-pharmaceutical alternatives to opioids for the treatment of pain (Garland, et al, 2019). Unfortunately, they are not used as frequently as they could be.

Which should be chosen depends on the type, duration, and personal reaction to pain. Neuropathic pain (Colloca et al 2017), for example, is different from acute pain, and it responds to different forms of treatment. In addition, pain may be due to trauma, such as broken bones, to surgery, to arthritis, cancer, diabetes, neurological damage, spinal conditions, shingles, etc.

Of course, **the use of opioids can be appropriate for some types of pain**. (Wood, 2019) For example, opioids are often appropriate for people with terminal illnesses reaching the end of life, although some people prefer to avoid them so as to remain alert for as long as possible.

The use of opioids for acute pain that is likely to be short-lived may also be appropriate, but for some patients there may be alternatives with less risk of addiction. When acute pain can be anticipated, such as post-surgical pain, a plan for pain management with an eye towards using alternatives to opioids should be developed. It is also possible to do a rapid assessment when patients come to emergency rooms in acute pain.

The long-term use of opioids for chronic pain has high risk of addiction and should be used only as a last resort for people who are functionally impaired by unrelenting pain. Fortunately, there is a clear trend not to use opioids for the treatment of chronic pain. Hundreds of thousands of people are now being tapered off the opioids (Dowell, et al 2019) they may have used for years.

As we have said, **it is critical to understand the type and source of pain in devising a chronic pain management plan.** There are a number of medications, such as gabapentin and some anti-depressants that are frequently prescribed instead of opioids. They are effective for some types and causes of pain but not for others (Colloca et al 2017). And some patients are troubled by side-effects such as sleepiness and sexual dysfunction.

Again, **individualized choices based on a good evaluation are the key to effective pain management**.

Unfortunately, the current, virtually universal approach to evaluating pain is fundamentally misleading. Medical practitioners ask patients to rate their pain from 1-10. This highly subjective evaluation of pain does not come close to capturing the complexity of the pain experience. There are tools for rapid evaluation of pain (Gordon 2015) that are far more useful.

In general, an individualized assessment should include (1) how the patient is experiencing pain now, (2) how they experienced it in the past, (3) their personal pain tolerance, (4) how much pain interferes with their functioning and life satisfaction, and (5) their emotional reaction to pain.

Emotions play a very important role in a patient's experience of pain. For example, anxiety about how bad pain will be makes the experience of pain worse as does a sense of hopelessness and helplessness. Emotional aspects of pain can be assessed by using the specifiers from the recent International Classification of Diseases (ICD-11) for pain (Treede et al 2019).

Attitudes towards pain, optimism about life, engagement in pleasurable and meaningful activities and relationships, all have an impact on the experience of pain. Counseling of various kinds can help people to overcome demoralization (Friedman and Nestadt 2013) about their physical condition

and can help them to be as active and involved as their physical condition permits.

Drugs that reduce anxiety and/or depression can be helpful to some patients, but they need to be used with great care. **Benzodiazapines combined with opioids,** for example**,** are a **major contributor to drug overdose deaths** (Sun et al 2017), (Gladden et al 2019). Anti-depressants and beta-blockers can have distressing side effects including increasing the risk of falls among older adults (Marcum et al 2017).

The key is to use this basic information to **tailor an individualized plan to address the psychological, social, and spiritual dimensions of a person's life as well as the physical sources of pain**.

Pain management, that is, needs to become one form of "precision medicine", which increasingly is the hope for vast improvements in treatment for many medical conditions.

More informed and precise pain management without reliance on opioids requires a number of changes in health and behavioral health policy:

(1) Policy makers need to understand that the opioid epidemic is a complex, multi-dimensional problem requiring a multi-dimensional response.

(2) Regulations, standards, and practice guides should emphasize prevention of opioid addiction by using opioids only rarely and in accordance with an individualized pain management plan.

(3) Effective pain management requires multi-disciplinary interventions. Comprehensive delivery systems that include physical, behavioral, and dental care can contribute to improved pain management.

(4) Pain management should become part of the enterprise of precision medicine—personalized, tailored treatment.

(5) Training and education of clinicians—medical, behavioral, and dental—needs to change, emphasizing meaningful evaluation and tailored multi-dimensional pain management interventions.

(6) This requires more effective translation of research into practice. There needs to be more funding for this to take place.

(7) Finally, researchers are far from having all the answers they need to fully tailor effective interventions. More research will be absolutely essential to ultimately be able to manage pain without causing addiction or other unfortunate outcomes. NIH's billion-dollar investment this year is a great first step. It will need to continue.

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