COMMENTARY

Multimodal Analgesia, Still Underused Nationwide, May Be Key in Reducing Opioid Abuse

James D. Beckman, MD; Ellen M. Soffin, MD, PhD

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James D. Beckman, MD: Hi. I am Dr Jim Beckman, an anesthesiologist and clinical director of the Department of Anesthesiology at Hospital for Special Surgery (HSS) in New York City.

Ellen M. Soffin, MD, PhD: I am Dr Ellen Soffin, an anesthesiologist and associate director of research for the Department of Anesthesiology, also at HSS.

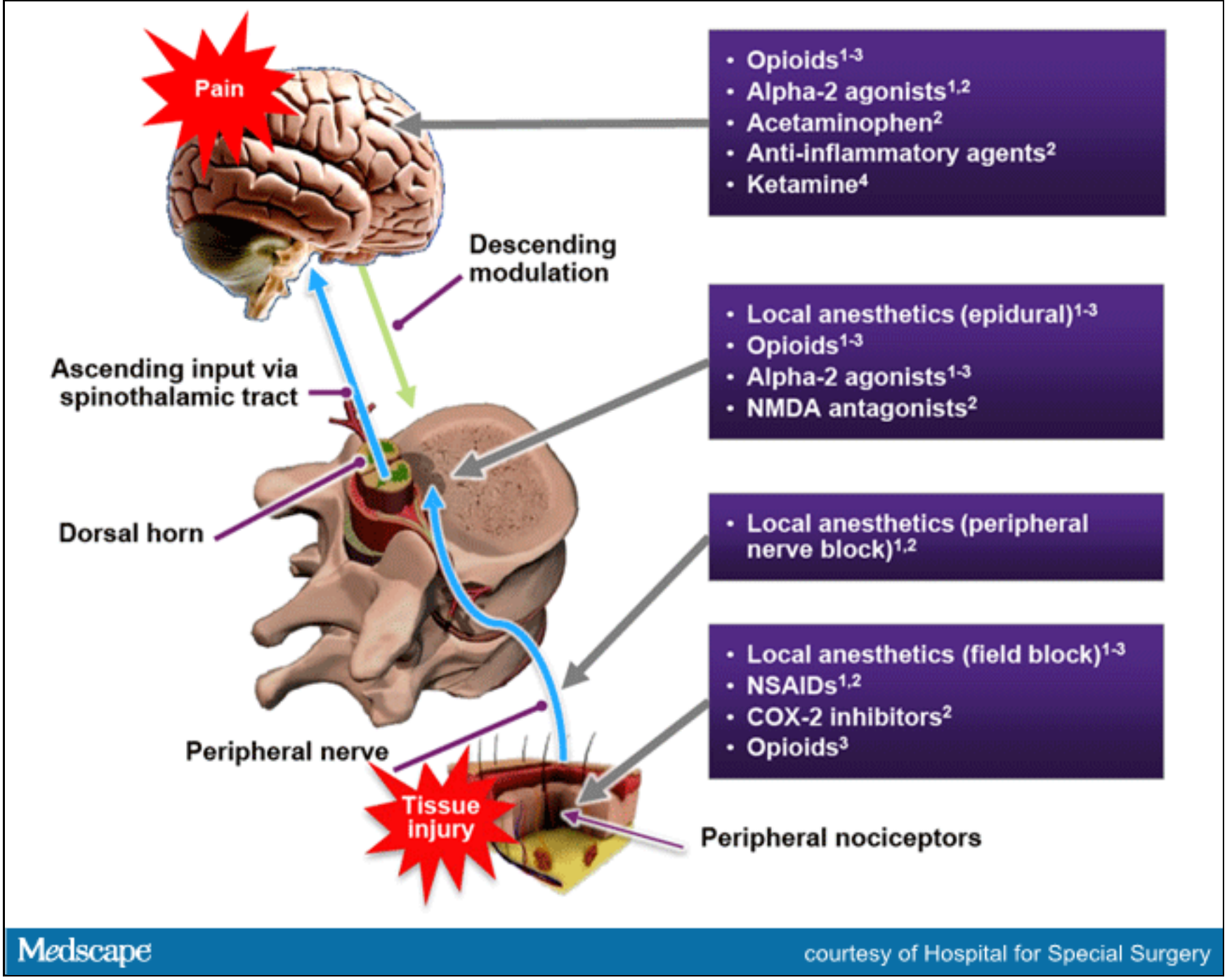
Defining a Multimodal Approach

Dr Beckman: Over the next 15 minutes or so, we'd like to talk about multimodal analgesia (MMA), what it is, and how it can improve patient care and overall perioperative outcomes.

At HSS, we are completely dedicated to the use of MMA in the care of our patients. Moreover, we see it as a linchpin in two of our department's major focuses, one of which is enhanced recovery after surgery (ERAS), in which Dr Soffin is an expert. The other is how our department takes steps to address the national narcotics crisis.

To set the stage, Dr Soffin, could you tell me what MMA is?

Dr Soffin: This is a concept that has been around since the 1990s and essentially refers to the use of more than one pain-control modality to achieve effective analgesia.[1] It includes a very broad group of analgesic therapies, most of which work at different sites across the peripheral and central nervous systems. By combining analgesic agents that target different receptors and pathways, we can enhance pain control by producing additive, or synergistic, effects. This also helps to minimize any side effects that are associated with a single agent.



In particular, we worry about side effects associated with opioids or opioid monotherapy. As anesthesiologists, we classically consider pharmacologic therapies, and some of the main tools include acetaminophen, nonsteroidal anti-inflammatories, and steroids. Narcotics do play a role, but newer agents that are being used more prevalently include N-methyl-D-aspartate (NMDA) receptor antagonists, either ketamine or dextromethorphan, at doses that are well above what is used for an antitussive effect, as well as antiseizure medications like gabapentinoids, particularly gabapentin and pregabalin.

For those of us who practice regional anesthesia, MMA also prominently features neuraxial techniques, peripheral nerve blocks, and catheters.

Dr Beckman: There are also some less common but important adjuncts that I would add at this point. These include immersive virtual reality, which is an emerging modality; acupuncture; injections such as trigger point injections and epidural steroid injections of various kinds; meditation and other neuroexperimental modalities; cryotherapy; dextromethorphan, as you just mentioned; transcutaneous electrical nerve stimulation units; peripheral perineurovascular catheters; and antidepressants where appropriate in chronic pain.

Dr Soffin: Sounds like there is a huge host of options. What are some of the benefits of MMA?

Dr Beckman: First and foremost, it is going to improve analgesia. In doing so, at the same time, it minimizes nausea and vomiting and sedation. The improved analgesia in turn facilitates physical therapy and rehab goals and ultimately may translate into a shorter length of stay and better patient satisfaction. Quite frankly, many of these benefits are realized simply from reducing the total opiate consumption and, therefore, the opiate-related side effects.

Incorporating MMA

Dr Soffin: Do you think that MMA should be recommended as the standard of care for all of our surgical patients?

Dr Beckman: Absolutely. I do. There are strong endorsements already by multiple pain and anesthetic societies for the embracing of MMA.[2,3]

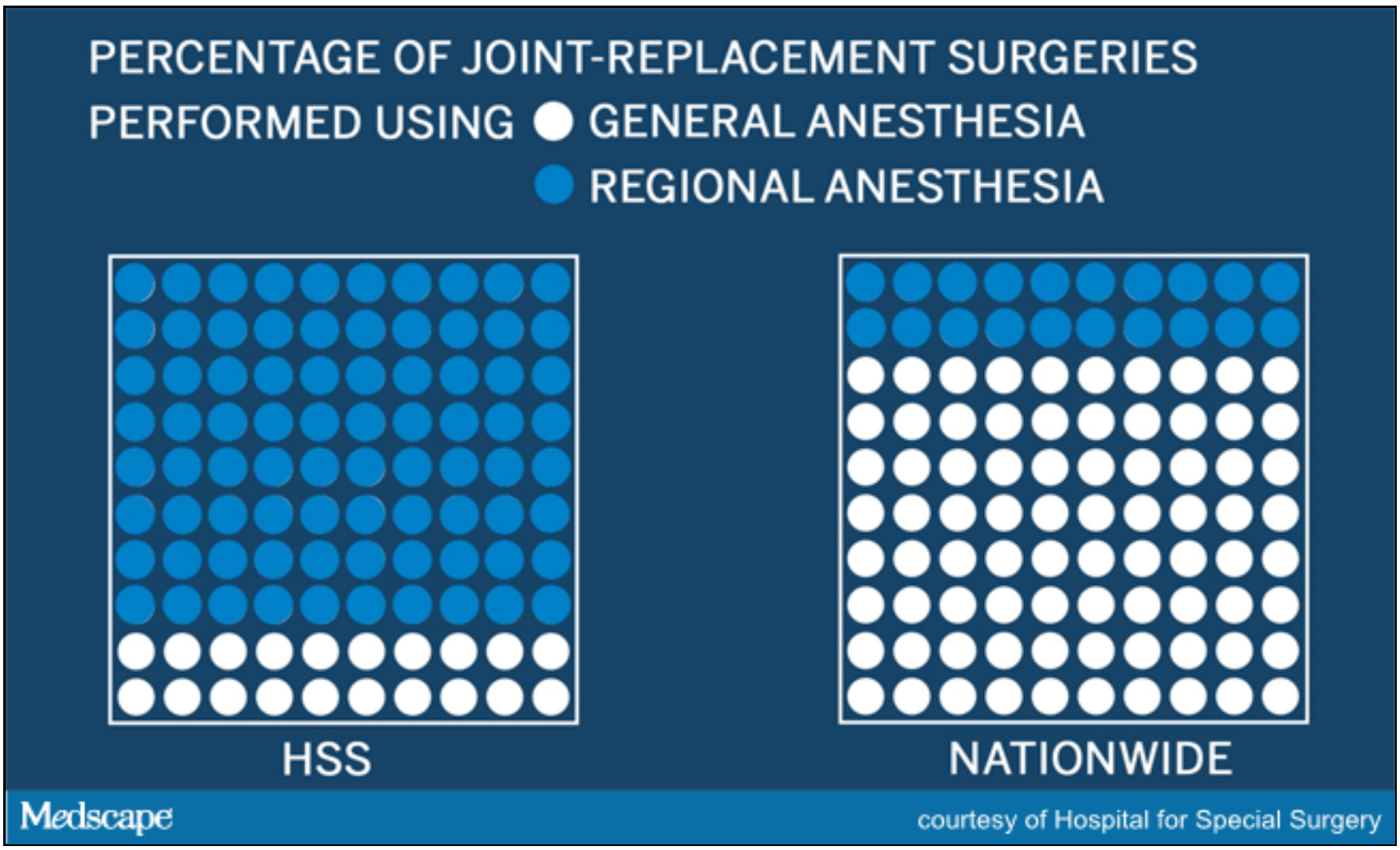
Unfortunately, however, we are not really seeing the penetration into its widespread use that one might expect. In fact, in recent large national studies, it is estimated that only 25%-50% of all patients undergoing surgery are receiving MMA therapies.[4] Curiously, regional anesthesia, which is an important part of MMA, is even worse, with only about 20% of cases receiving regional anesthesia.[5,6] There is a significant opportunity here for us to improve overall patient care and outcomes by employing MMA.

Dr Soffin: I think we have a different experience at HSS and in our department. How would you say MMA enters into our practice patterns?

Dr Beckman: Let me start by saying that, for us, we do almost exclusively, if not exclusively, orthopedic surgery. Orthopedic surgery is pretty unique in that almost every procedure lends itself to the use of regional anesthesia, even some of our spine cases. In our practice, we use more than one form of analgesic in basically all of our patients.

Dr Soffin: What are some of the more specialized methods of MMA that you would talk about using in our practice?

Dr Beckman: The Department of Anesthesiology at HSS performs more regional anesthesia than any other hospital in the country, and so this going to be a big part of our practice.



Regional anesthesia is an invaluable part of MMA and anesthesia. It allows us to provide pain relief and anesthesia with much lower doses of systemic medications; and there is very little, if any, nausea or systemic side effects, or far fewer, because there is much lower use of systemic medications as a result.

Dr Soffin: How else do you make use of the principles of MMA in your own practice?

Dr Beckman: I use many classes of medications. Some of them you have just mentioned. I use NMDA receptor antagonists such as ketamine or higher doses of dextromethorphan. We use alpha-2 agonists such as dexmedetomidine, intravenous (IV) lidocaine, nonsteroidal anti-inflammatory drugs, and acetaminophen, which can be given IV or orally.

We are often using lower doses than were originally prescribed for these medications. This reduces the side effects for each and also reduces, importantly, the overall requirement for opiate analgesics.

Dr Soffin: That sounds very comprehensive. When does planning for the use of regional techniques and other forms of MMA begin?

Dr Beckman: It begins preoperatively when we can meet with the patient, review their history, and determine which elements of our armamentarium—not only pharmacologic but procedural—are appropriate. Then we can have a detailed discussion with the patient about our plan. It's in that setting that they can give truly informed consent and begin to become an active participant in their own recovery.

ERAS Protocols

Dr Soffin: Recovery after surgery is one of my own particular interests. We have been progressively incorporating MMA into our ERAS protocols for our orthopedic patients in recent years.

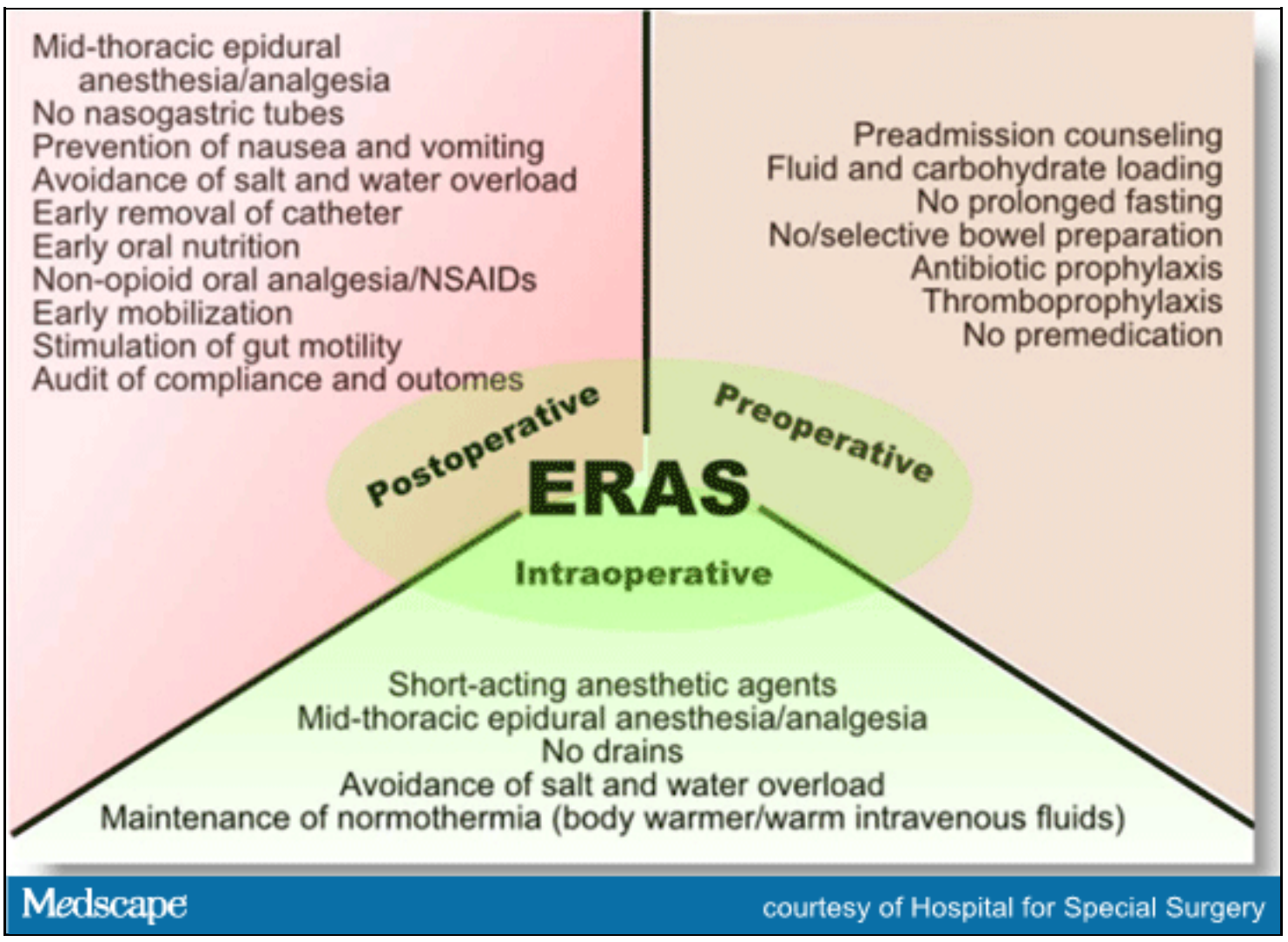
Dr Beckman: How do you define ERAS, and how have you come to apply it to orthopedic surgery?

Dr Soffin: ERAS is one of the leading examples of pathway-based perioperative care. Any enhanced recovery protocol provides a structured mechanism that can be used to improve the quality of care, reduce variation in surgical care, and minimize complications while improving outcomes after many different types of surgery.

In terms of the physiology, we know that the stress of surgery and anesthesia leads to fairly predictable disturbances across organ systems. It is these disturbances that lead to complications, poor outcomes, and increased length of stay. ERAS seeks to minimize the stress response to surgery and anesthesia and thereby control perioperative physiology to optimize the patient. There is a long tradition of pathway-based care in orthopedic surgery, and I think for us ERAS really represents the next step in the evolution of that care.

Dr Beckman: What is included in ERAS pathways?

Dr Soffin: There is a range of pre-, intra- and postoperative components, but really the key elements include preoperative patient and caregiver education and expectation setting; aggressive optimization of comorbidities prior to surgery; use of standardized anesthetic and surgical techniques; very importantly, early postoperative mobilization and oral nutrition; and, throughout the entire span, MMA.



Dr Beckman: What benefits have already been realized by the adoption of ERAS structure; and, specifically, what is the

contribution of MMA to those benefits?

Dr Soffin: That is a good question. Multiple studies from multiple surgical subspecialties have shown that ERAS decreases postoperative complications and costs, shortens length of hospital stay, and enhances patient satisfaction.[7,8] MMA, in particular, features prominently in all of these pathways across surgeries. It is probably because we know that pain is a major contributor to the global stress response, and opioids are very often the main form of postoperative analgesic, as you have just described for us. Both the pain and opioid-related side effects contribute to poor outcomes after surgery.

On the other hand, MMA can improve pain control, so it can directly affect the stress response, and it also minimizes opioid requirements and opioid-related side effects, so it helps to facilitate recovery and better outcomes.

Dr Beckman: Are there particular analgesics that are commonly used in the ERAS pathways?

Dr Soffin: There are. The evidence base is particularly strong for acetaminophen, nonsteroidal anti-inflammatories, and the gabapentinoids. There is also strong evidence for the NMDA receptor antagonists and local regional techniques. Again, these are recurring themes that we have been talking about today. All of these things are consistently opioid sparing and analgesic in their own right, so they logically form the basis of many ERAS pathways in terms of the multimodal components.

Dr Beckman: What steps would you recommend to institutions just setting up to begin ERAS pathways?

Dr Soffin: It can be a daunting task, but there is a wealth of resources that are available for review and advice from multiple societies. To name a few, and certainly not an exhaustive list, there is the European-based ERAS Society; the American Society for Enhanced Recovery, which has multiple protocols that are already available; the American College of Surgeons' National Surgical Quality Improvement Project; and the American Society of Anesthesiologists' Perioperative Surgical Home model. These are all great warehouses for advice for getting started to create the pathway and for implementation.

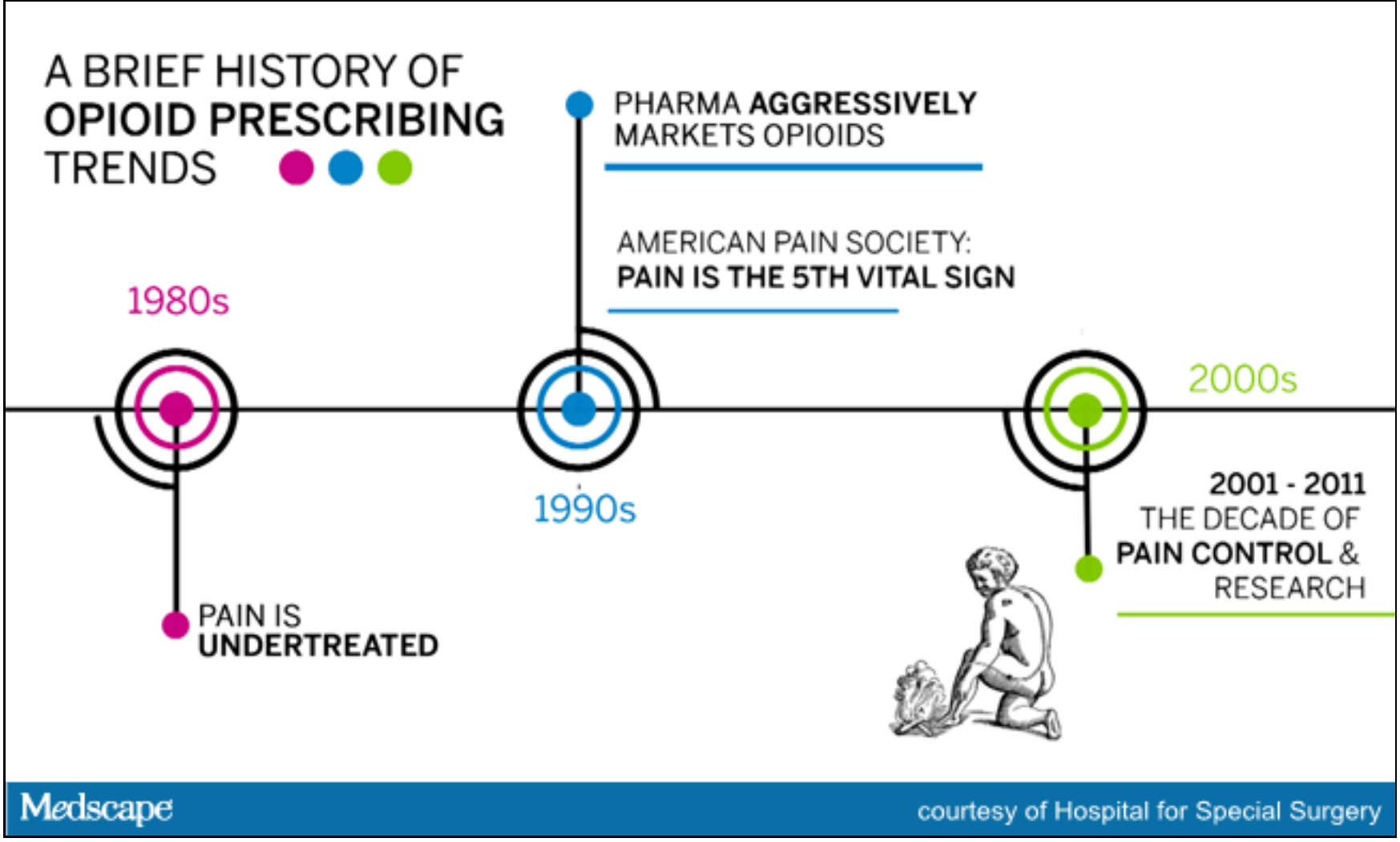
Essentially, the process is to evaluate the best available evidence for all of the interventions that will mitigate known complications after your surgery of interest and then integrate them into individual and institutional practice.

Tools for Battling an Epidemic

Dr Beckman: Another very important opportunity for MMA is related to a hot topic of conversation, which is the current prescription opiate crisis.

Dr Soffin: I agree. I think we, as orthopedic anesthesiologists, are becoming increasingly aware of the role that our specialty plays in this crisis. Data suggest that the crisis has been driven, in no small part, by opioid overprescribing for patients having orthopedic procedures.[9,10] How do you think we got here?

Dr Beckman: Briefly, as recently as the 1980s, there was a legitimate widespread concern that pain was being undertreated. This began with malignant pain and then had mission creep to nonmalignant pain. Then initiatives came along with pain as the fifth vital sign and "The Decade of Pain." There was a rather significant effort by pharmaceutical companies to develop new products, and there was marketing that went along with that. The number of prescriptions absolutely ballooned. Now the pendulum has begun to swing back and has done so quite briskly.



Dr Soffin: How do you think MMA can help surgical patients in the context of this national epidemic?

Dr Beckman: We focus on reducing narcotic consumption, and MMA analgesia is an essential cornerstone of that strategy to find alternative pain management. There are many complex forces at play with the opioid crisis, and as physicians our responsibility is to use the tools that we have that can make patients comfortable and safe while decreasing opiate prescribing.

It is important to emphasize, however, that opiates have an essential role in MMA when prescribed judiciously and appropriately. There is really no room for opiate monotherapy.

Dr Soffin: I agree, and I think that is a major take-home point of our discussion today, which has been interesting and informative.

We have seen that MMA uses combinations of agents together to provide a synergistic effect on pain control. MMA is safe and effective. It is probably underused nationally and internationally. It also is a key component of the ERAS pathways and likely has a role to play in some of the solutions to the national opioid crisis.

Thank you for joining us today.

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