- **FACT SHEET NO. 10**

Management of Pain Related to Surgery and Procedures in Patients with Known or Suspected Cancer

According to the U.S. Centers for Disease Control, 14.1 million new cancer cases were diagnosed worldwide in 2012. By 2025, 19.3 million new cancer cases—a 37 percent increase—are expected to be diagnosed each year (1). This increase reflects both the increase in the world's population as a whole, as well as an increasingly aged population in many resource-rich nations. Similarly, the number of patients who undergo surgery is large and continues to increase (2).

Patients with cancer may require diagnostic or therapeutic procedures or surgery for their cancer; these also may be required for conditions unrelated to their cancer. Comfort is a major concern for these individuals and those close to them. With advances in cancer therapy, many patients survive with indolent disease or in remission—frequently at the expense of sequelae such as neuropathic pain from radiation or chemotherapy.

Blurring of a traditional dichotomy that a patient is either a "cancer patient" or not now also extends to a patient's having a "procedure" versus an "operation." Many operations that previously required large incisions and trauma to surrounding tissues are now accomplished via minimally invasive procedures, such as endoscopies. Therefore, optimal postoperative pain management for cancer patients requires individualized assessment and planning now more than ever.

If available, a pain service consultation before surgery will facilitate such planning based upon the preferences of the patient and family, the nature of the operation or procedure, the requirements of the surgeon, and the readily available resources. Such planning facilitates continuity of care by the pain team across different phases of recovery. Knowing that postoperative pain will be managed by dedicated pain experts reduces anxiety for patients (3) and those close to them. Whether or not a dedicated team is available, three phases of acute care must be considered:

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Preoperative or Pre-procedural Assessment

- **Does the known or suspected malignancy have clinical features of potential relevance to the pain plan?** Altered mental status is common with electrolyte imbalances (e.g., low-serum sodium or high-serum calcium) or cerebral metastases, influencing the selection and titration of analgesic agents. Elevated intracranial pressure dictates extreme caution when providing opioid analgesia. Hepatic or renal insufficiency may prolong the metabolism of analgesic or anxiolytic drugs; in the former case, this may lower the ceiling dose for acetaminophen/paracetamol and in the latter, for NSAIDs. Malignant pleural or pericardial effusions may compromise oxygenation or circulatory stability. Impaired blood clotting, or the potential for epidural metastases, may preclude spinal or epidural anesthesia.

- **How may prior treatment of the malignancy or its associated pain influence the pain plan?** Preoperative opioid treatment may render patients extremely tolerant or hyperalgesic, requiring very high doses of opioids and/or use of adjuvants such as ketamine. Radiation may produce painful nerve damage but can also decrease pain by reducing tumor burden (e.g., in isolated bone metastasis or spinal cord compression).
- **Is the setting for the surgical procedure conducive for the safe and effective provision of the type of anesthesia and postoperative analgesia**? Whether the setting is an office, an ambulatory facility, or a hospital must be considered.

Intraoperative Management

- The dose of analgesics that opioid-tolerant cancer patients require intraoperatively and postoperatively is often very high. Intraoperative methadone (4) may be useful if the patient is already tolerant to other opioids, as might ketamine (5). Regional or neuraxial anesthesia/analgesia is reasonable in that setting, too, unless contraindicated. Meticulous caution must be taken when positioning cancer patients on the operating room table to prevent bone fractures or painful nerve stretching or compression.

Postoperative Management

The type and intensity of postsurgical pain will vary from person to person based on several factors:

- The type of cancer—cancer of the bone or metastasis to bones are among the most predictably painful
- The type and technique of surgery—conventional large incisions versus minimally invasive small incisions; simple superficial diagnostic biopsy or needle aspiration biopsy to extensive debulking; neuraxial decompression; or limb amputation. Certain surgical procedures have well-described associated pain syndromes (e.g., post-thoracotomy, post-mastectomy) that can be watched for and treated early, if they emerge (6).
- Adjuvant therapy—chemotherapy and/or radiation therapy per se produce or alleviate pain

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- Chronic pain—patients on high doses of opioids for chronic cancer or non-cancer pain
- Patient genetics and prior exposure to pain, with consequent sensitization

Effective postoperative pain management also requires distinguishing anxiety or depression from pain and appropriate treatment (3). In addition, coordination of effective pain control with postoperative rehabilitation (e.g., restarting preoperative medications) will hasten the patient's progress across progressively less intensive care settings. Finally, for patients whose procedure or operation discloses terminal disease, postoperative analgesic titration may provide the foundation for an analgesic regimen that may be carried over into hospice.

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