EMORY UNIVERSITY SCHOOL OF MEDICINE | Department of Anesthesiology

How to build Cancer Pain Service

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DISCLOSURES

- Salary support as a KL2 scholar (mentored career development award) from 08/18 to 07/20 at Georgia Clinical and Translational Science Alliance, supported in part by the National Center for Advancing Translational Sciences of the National Institutes of Health under Award number UL1TR002378 and KL2TR002381

- Scientific Advisory Board, Releviate LLC

HOW TO BUILD CANCER PAIN SERVICE-STEPS

- Understand cancer pain
- Know how to treat cancer pain
  - Guidelines on treatment of cancer pain
  - Identify mentors
  - Network/conferences
- Understand and build relationship with your referring providers
- There will be challenges: identify institutional partners
  - Interdisciplinary efforts
- Reassess as you grow

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Prevalence of pain in cancer patients

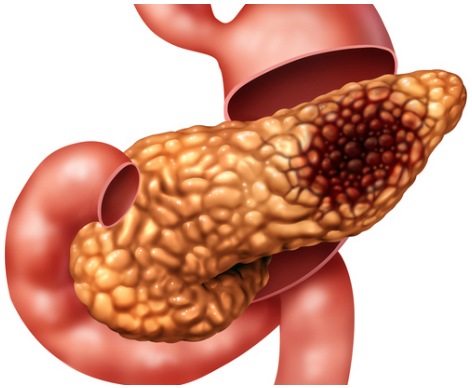
- 53% of patients at all stages of cancer
- **58% to 69% in those with advanced cancer**
- **30% of cancer pain patients have uncontrolled pain**

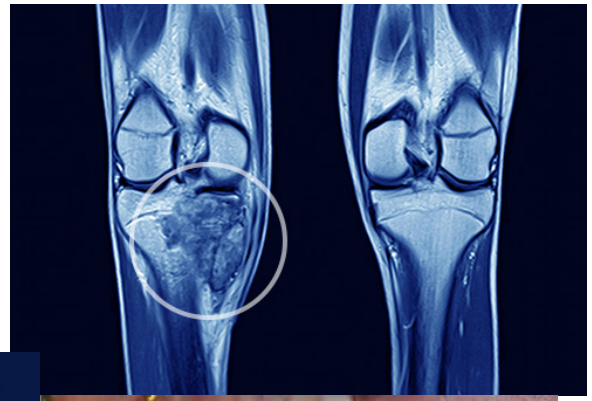
- "No cancer patient should live or die with unrelieved pain". *JCAHO comprehensive standards of care for pain management, 1999*

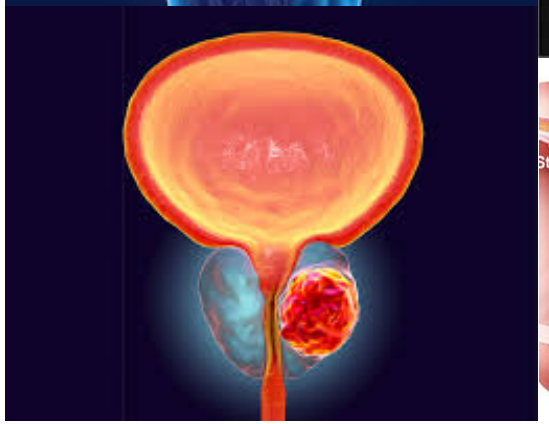
- van den Beuken-van Everdingen MH, *Ann Oncol* 2007
- Kurita, *Acta Oncol* 2015

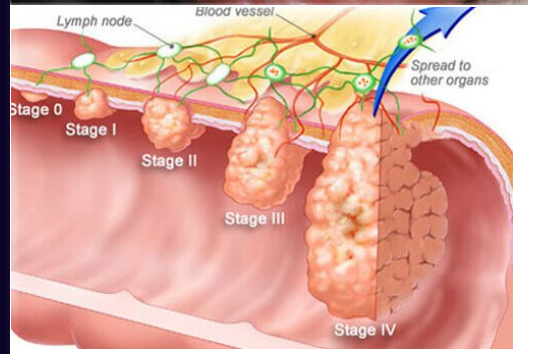
Prevalence of Cancer Pain by Primary Site

- Pancreas 80-100%
- Bone 75-80%
- Oral Cavity 80%
- Genitourinary 75-78%
- Breast 50-100%
- Lung 55-85%
- Colon 50-95%
- Lymphoma 20-70%
- Leukemia 10-75%









- Warfield CA, Manual of Pain Management, Lippincott Co. 1991: 145.

Pain in Cancer Survivors

- **14 million survivors in US**
  - **2/3rd survive >5 years after diagnosis**
  - **16-50% have chronic pain!**
  - Most common treatment-induced neuropathies secondary to surgery, radiation therapy and chemotherapy

- **Incidence of post surgical pain**
  - Thoracotomy- 5–65 %
  - Cardiac surgery- 30–55 %
  - Mastectomy- 20–50 %

United States Cancer Statistics: 1999-2012. http://ww.cdc.gov/uscs
Macrae et al. Br J Anaesth, 2008

Cancer Treatment Related Pain Syndromes

- Chemotherapy related
  - Chemo-induced peripheral neuropathy
  - Raynaud's syndrome
  - Due to long term corticosteroids
  - Vertebral compression factures, Avascular necrosis
  - Carpal tunnel syndrome
- Hormone therapy related
  - Arthralgias, myalgias
  - Dyspareunia, gynecomastia
  - Osteoporotic compression fracture
- Radiation related
  - Osteoporosis, osteoradionecrosis and fractures
  - Painful secondary malignancies
  - Peripheral mononeuropathies, myelopathy
  - Plexopathies: brachial, sacral
  - Cystitis, enteritis, proctitis
  - Fistula formation, lymphedema, chest wall syndrome
- Stem cell transplantation-mediated graft versus host disease
  - Arthralgia, myalgias
  - Dyspareunia, vaginal pain
  - Dysuria
  - Eye pain
  - Oral pain and reduced jaw motion
  - Paresthesias
  - Scleroderma-like skin changes
- Surgical pain syndromes
  - Lymphedema
  - Post-amputation phantom pain
  - Post-mastectomy pain
  - Post-radical neck dissection pain
  - Post-surgery pelvic floor pain
  - Post-thoracotomy pain/frozen shoulder
  - Post-surgery extremity pain (e.g., sarcoma)

- Paice. *Journal of Clinical Oncology* 2016

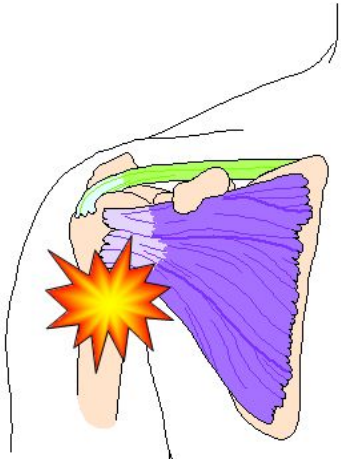
Etiology of pain in cancer patients

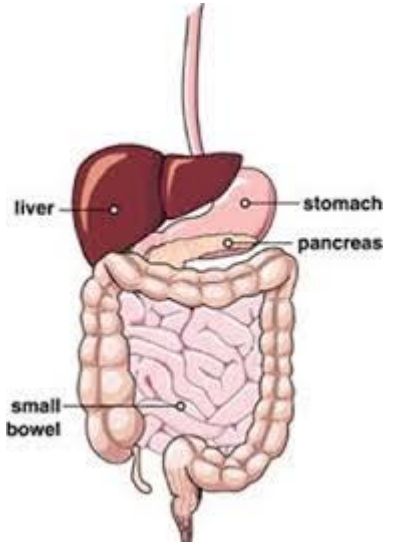
- Pain caused by **cancer**-tumor destruction, mass effect- 65%
- Pain caused by **anticancer therapy**- surgery, chemotherapy, radiation -25%
- **Co-incidental** pain- Headache, back pain, myofascial pain -10%

- van den Beuken-van Everdingen MH, *Ann Oncol* 2007
- Kurita, *Acta Oncol* 2015

Cancer pain types

- Nociceptive
  - Visceral
  - Somatic





- Neuropathic
  - Most common in cancer survivors

- Existential pain/
  Total pain/Suffering

- Mixed

- Perron. *Cancer control.* 2001

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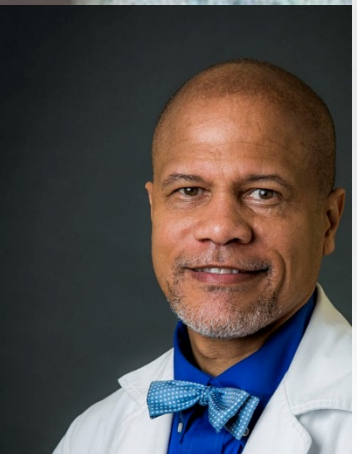
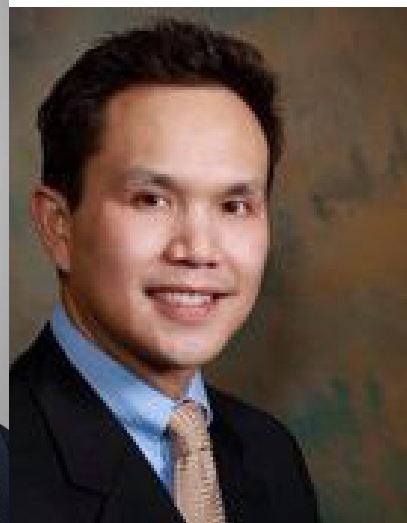
MENTORS





CONFERENCES/NETWORK

- Almost every major pain conference now has a section on cancer pain
  - Including ASRA, ASA, AAPM,
  - Cancer pain SIGs
- Cancer Pain Research Consortium Meeting
- Memorial Sloan Kettering Interventional Cancer Pain Symposium

The American Society of Pain and Neuroscience (ASPN) Best Practices and Guidelines for the Interventional Management of Cancer-Associated Pain

Authors Aman MM, Mahmoud A, Deer T, Sayed D, Hagedorn JM, Brogan SE, Singh V, Gulati A, Strand N, Weisbein J, Goree JH, Xing F, Valimahomed A, Pak DJ, El Helou A, Ghosh P, Shah K, Patel V, Escobar A, Schmidt K, Shah J, Varshney V, Rosenberg W, Narang S

- Excellent literature review and statements on current state of evidence
  - Opioids
    - Methadone
  - Ketamine
  - Radiation therapy
  - Blocks and neurolysis
  - Targeted drug delivery/intrathecal pump
  - Spinal Cord Stimulation
  - Vertebral augmentation and radiofrequency ablation
  - Radiofrequency lesioning and nerve block
  - Surgical procedures

Therapy	Statement	Evidence Level	Grade
Opioids for cancer pain	Opioids should be considered for moderate to severe cancer-related pain. Opioid agent selection should be individualized to account for the variance in pain presentations and co-existing medical comorbidities.	I III	A B
Methadone	Methadone should be considered when other opioids are ineffective, or additional NMDA or serotonin receptor modulation is desired. Dosing initiation is dependent on opioid tolerance with low introductory doses for naïve patients. For opioid tolerant patients a conservative approach is recommended starting at 75–90% less than the calculated equianalgesic dose using 1:15 to 1:20 conversion factor.	II-3 II-3 II-3	C B A
Ketamine	Ketamine therapy for cancer pain should be considered on a case-by-case basis for refractory neuropathic, bone, and mucositis-related pain.	II-1	B
Radiotherapy, radioisotopes, and bone-modifying agents for metastasis	External beam radiation therapy with short, fractionated regimens are favored over conventional protracted schedules for painful metastatic bone disease. Stereotactic body radiation therapy may be preferred for radio-resistant cancers or oligometastatic disease. There is evidence for the use of osteoclast inhibitors, though it has not been found to be effective for some cancers, such as metastatic non-small cell lung cancer. Therefore, these agents should be used as an adjuvant treatment and considered on a case-by-case basis	I II-1	A B
Blocks and neurolysis	Celiac plexus neurolysis should be performed for pancreatic cancer-related abdominal pain. Splanchnic nerves neurolysis should be considered in patients with intractable abdominal cancer-related pain due to advanced body and tail located pancreatic CA. Early neurolysis is associated with better outcomes Superior hypogastric plexus neurolysis should be considered in patients with intractable pelvic cancer-related pain. Ganglion impar neurolysis should be considered in patients with intractable perineal cancer-related pain.	I I II-3 II III	A B B B B
Targeted drug delivery	Intrathecal drug delivery using an implantable pump should be strongly considered in patients with cancer-related pain that is not responding to conventional medical management Trialing before intrathecal pump implantation for cancer-related pain should be optional and at the discretion of the physician and patient.	I III	A C
Spinal cord stimulation	Spinal cord stimulation may be considered in patients with refractory cancer pain. Spinal cord stimulation may be considered on a case-by-case basis for pain that is related to cancer treatment such as chemotherapy induced neuropathy.	II-3 III	C C
Vertebral augmentation and radiofrequency ablation	Vertebral augmentation should be strongly considered for patients with symptomatic vertebral compression fractures from spinal metastases.	I	A

The Polyanalgesic Consensus Conference (PACC): Recommendations on Intrathecal Drug Infusion Systems Best Practices and Guidelines

Timothy R Deer [1], Jason E Pope [2], Salim M Hayek [3], Anjum Bux [4], Eric Buchser [5], Sam Eldabe [6], Jose A De Andrés [7], Michael Erdek [8], Dennis Patin [9], Jay S Grider [10], Daniel M Doleys [11], Marilyn S Jacobs [12], Tony L Yaksh [13], Lawrence Poree [14], Mark S Wallace [15], Joshua Prager [16], Richard Rauck [17], Oscar DeLeon [18], Sudhir Diwan [19], Steven M Falowski [20], Helena M Gazelka [21], Philip Kim [22] [23], Michael Leong [24], Robert M Levy [25], Gladstone McDowell II [26], Porter McRoberts [27], Ramana Naidu [28], Samir Narouze [29], Christophe Perruchoud [30], Steven M Rosen [31], William S Rosenberg [32], Michael Saulino [33], Peter Staats [34] [35], Lisa J Stearns [36], Dean Willis [37], Elliot Krames [38], Marc Huntoon [39], Nagy Mekhail [40]

The Polyanalgesic Consensus Conference (PACC): Recommendations for Trialing of Intrathecal Drug Delivery Infusion Therapy

Timothy R Deer [1], Salim M Hayek [2], Jason E Pope [3], Tim J Lamer [4], Maged Hamza [5], Jay S Grider [6], Steven M Rosen [7], Samir Narouze [8], Christophe Perruchoud [9], Simon Thomson [10], Marc Russo [11], Eric Grigsby [12], Daniel M Doleys [13], Marilyn S Jacobs [14], Michael Saulino [15], Paul Christo [16], Philip Kim [17] [18], Elliot Marc Huntoon [19], Elliot Krames [20], Nagy Mekhail [21]

The Polyanalgesic Consensus Conference (PACC): Recommendations for Intrathecal Drug Delivery: Guidance for Improving Safety and Mitigating Risks

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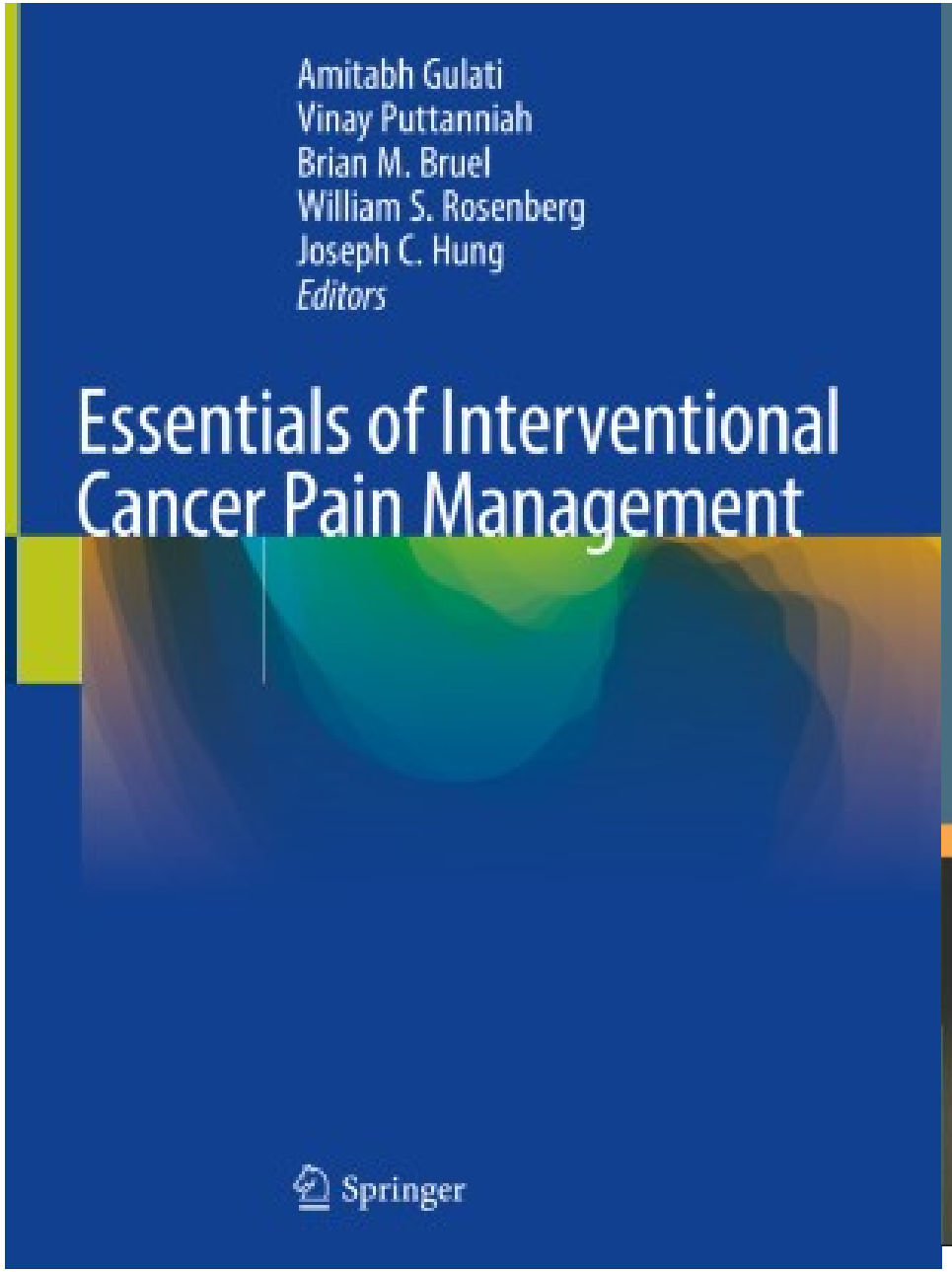
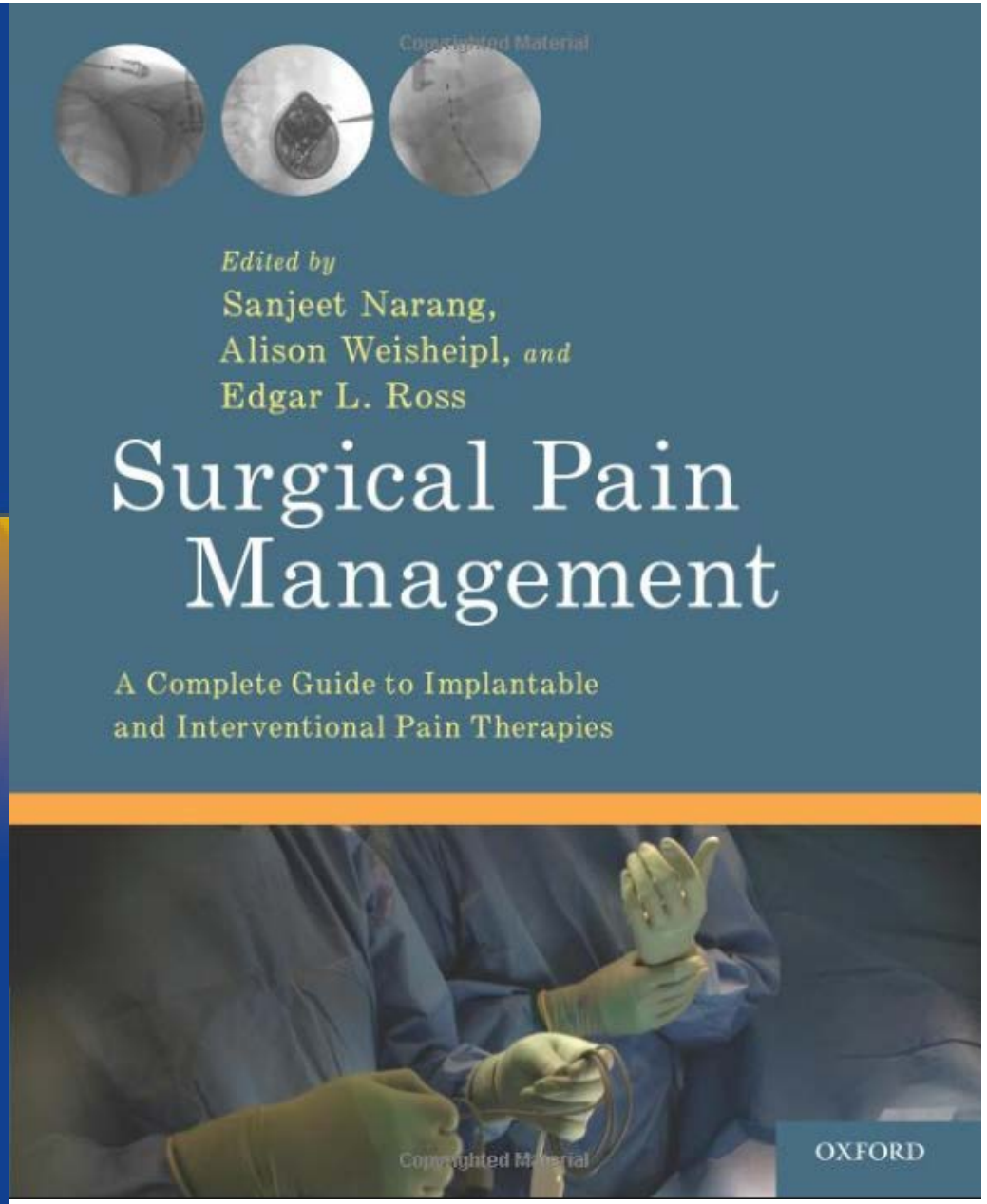

Amitabh Gulati
Vinay Puttanniah
Brian M. Bruel
William S. Rosenberg
Joseph C. Hung
Editors
Essentials of Interventional Cancer Pain Management
Springer


Edited by
Sanjeet Narang,
Alison Weisheipl, and
Edgar L. Ross
Surgical Pain Management
A Complete Guide to Implantable and Interventional Pain Therapies
OXFORD

NCCN GUIDELINES ADULT CANCER PAIN 2020:
MAJOR INDICATIONS FOR INTERVENTIONAL CONSULTATION

- **Pain likely to be relieved with nerve block** (pancreas/upper abdomen with celiac plexus block, lower abdomen with superior hypogastric plexus block, intercostal nerve, peripheral/plexus nerve)

- **Failure to achieve adequate analgesia and/or the presence of intolerable adverse effects** (may be handled with intraspinal agents, blocks, spinal cord stimulation, or destructive neurosurgical procedures)

- National Comphrehensive Cancer Network- Clinical Practice Guideline in Oncology- Adult Cancer Pain, Version 3. 2020

NCCN GUIDELINES ADULT CANCER PAIN 2020: COMMONLY USED INTERVENTIONAL PROCEDURES

- Regional Infusions
- Neurostimulation procedures
- Neurodestructive procedures
- Percutaneous vertebral augmentation
- Percutaneous ablation techniques for bony lesions

NCCN Guidelines Adult Cancer Pain 2020: General Considerations for interventions

- Patient prognosis is important to consider when choosing the type of intervention
- Financial considerations
- Other factors
  - Infection
  - Coagulopathy
  - Distorted anatomy
  - Patient unwillingness
  - Medications that increase risk of wound healing or bleeding (e.g., antiangiogenesis agents such as bevacizumab)
  - Technical expertise availability

Cancer Pain Program at Emory Pain Center: What do we do?

- Multimodal pain treatment, focusing on minimizing opioids using techniques such as
  - Complementary therapies including acupuncture, physical therapy
  - Interventions including
    - nerve blocks and neurolysis/nerve ablation,
    - joint injections, epidural steroid injections,
    - neuromodulation (spinal cord stimulator, peripheral nerve stimulator),
    - vertebroplasty,
    - intrathecal pump, etc.
  - Maximize non-opioid pain medications
  - Opioid medications when necessary

Peripheral Nerve Blocks

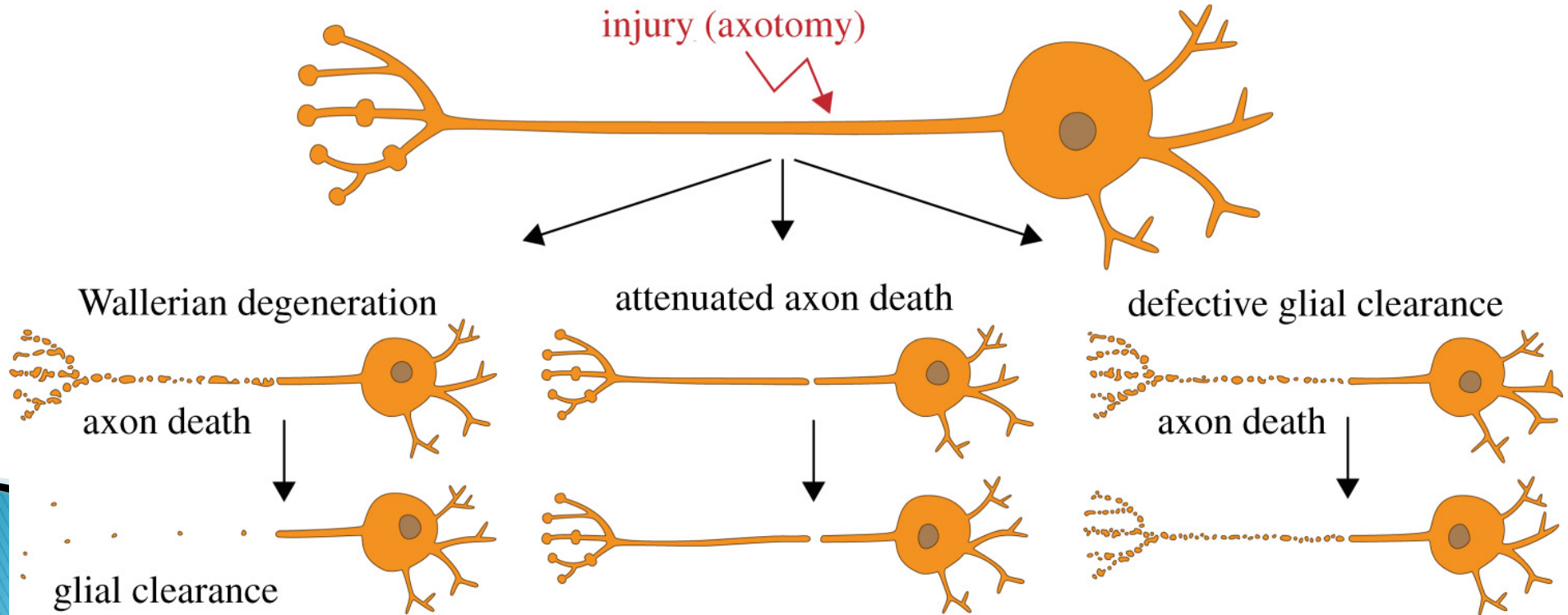
- Usually for Somatic or Neuropathic Pain

- May consider neurolysis if only getting short term relief with nerve block using local anesthetic and steroid
  - However, need to weigh risk vs benefit
    - neurological deficit, neuritis, damage to nearby structures vs pain relief

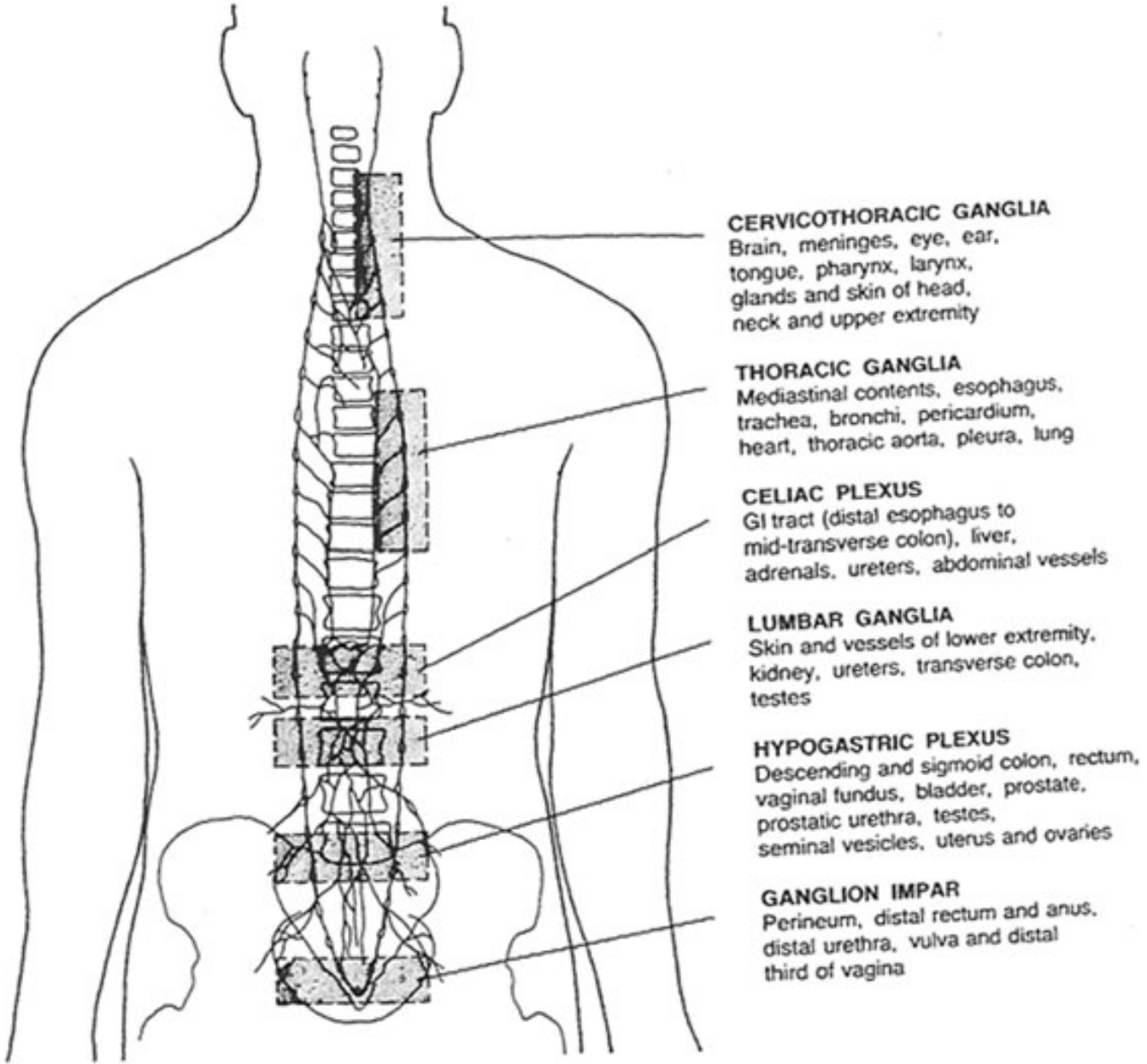
- Can consider peripheral nerve stimulator if neurolysis is not an option
  - (generally due to potential for motor weakness)

Neurodestructive procedures

- For well-localized pain syndromes
- Spinal analgesics used more frequently now
- Consider nerve block before neurolysis, esp for somatic pain



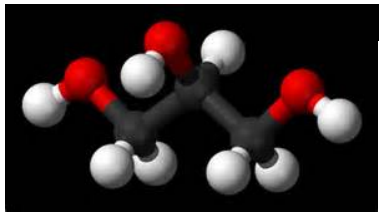
Neurodestructive procedures for visceral pain



Plancarte R, Amescua C, & Patt RB: Sympathetic neurolytic blockade. In Patt RB (ed): Cancer Pain. Philadelphia: JB Lippincott, 1993.

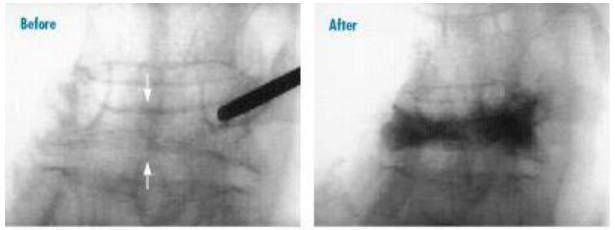
Methods of Nerve Destruction: Neurolytic Agents

- Chemical
  - Alcohol
  - Phenol
  - Glycerol
  - Chlorocresol
  - Ammonium Compounds
  - Aminoglycosides
  - Hypertonic Saline
  - Iced Saline
- Physical
  - Cryoablation
  - Radio Frequency Ablation (RFA)
    - Thermocoagulation/Conventional
    - Pulsed
  - High Intensity Focused Ultrasound(HIFU)

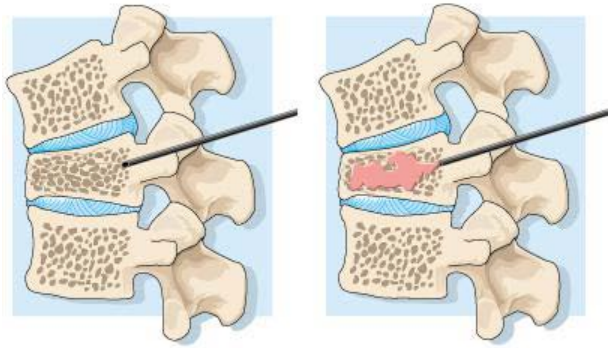


Percutaneous vertebral augmentation

- For
  - Lytic osteoclastic spinal mets
  - Vertebral compression fractures or spinal instability where surgery may not be feasible or indicated



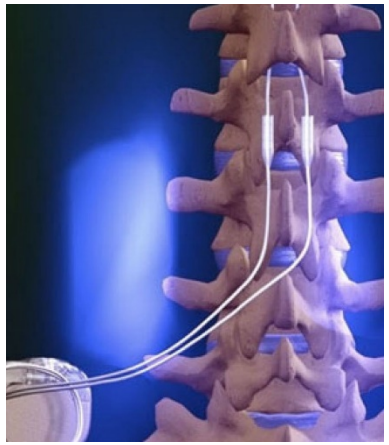
- Vertebroplasty
  - Interventional Technique for Vertebral Fractures
  - Injection of bone cement to support weakened bones
  - Provides immediate and substantial pain relief

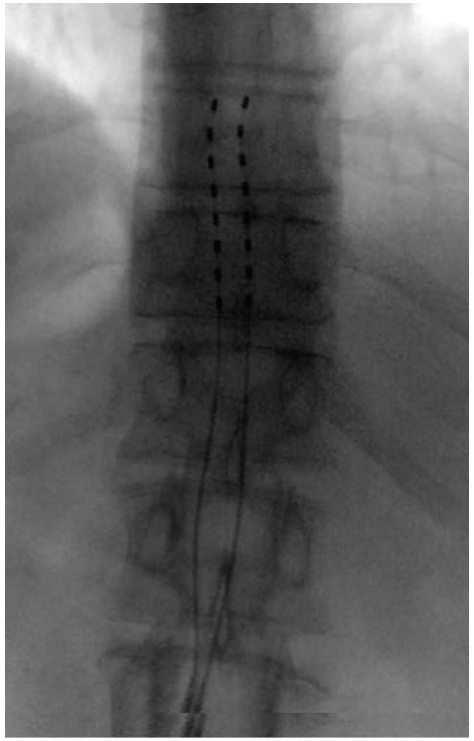


- Kyphoplasty involves balloon inflation of compressed spine prior to injection of the cement

Spinal Cord Stimulator: Cancer pain

- Now mostly MRI compatible-
  - ASPN practice guidelines
  - See manufacturer recommendations
- For stable disease
- Pain in limb, visceral pain
- Neuropathic pain





- Cochrane review- not enough good quality evidence, more trials needed
  - 4 case series, total n = 92, small studies, quality-low
  - SCS group used fewer drugs than the standard treatment

- Peng. *Cochrane Database of Systemic Reviews* 2015
- Sayed. *Neuromodulation 2020*

PNS on the rise!

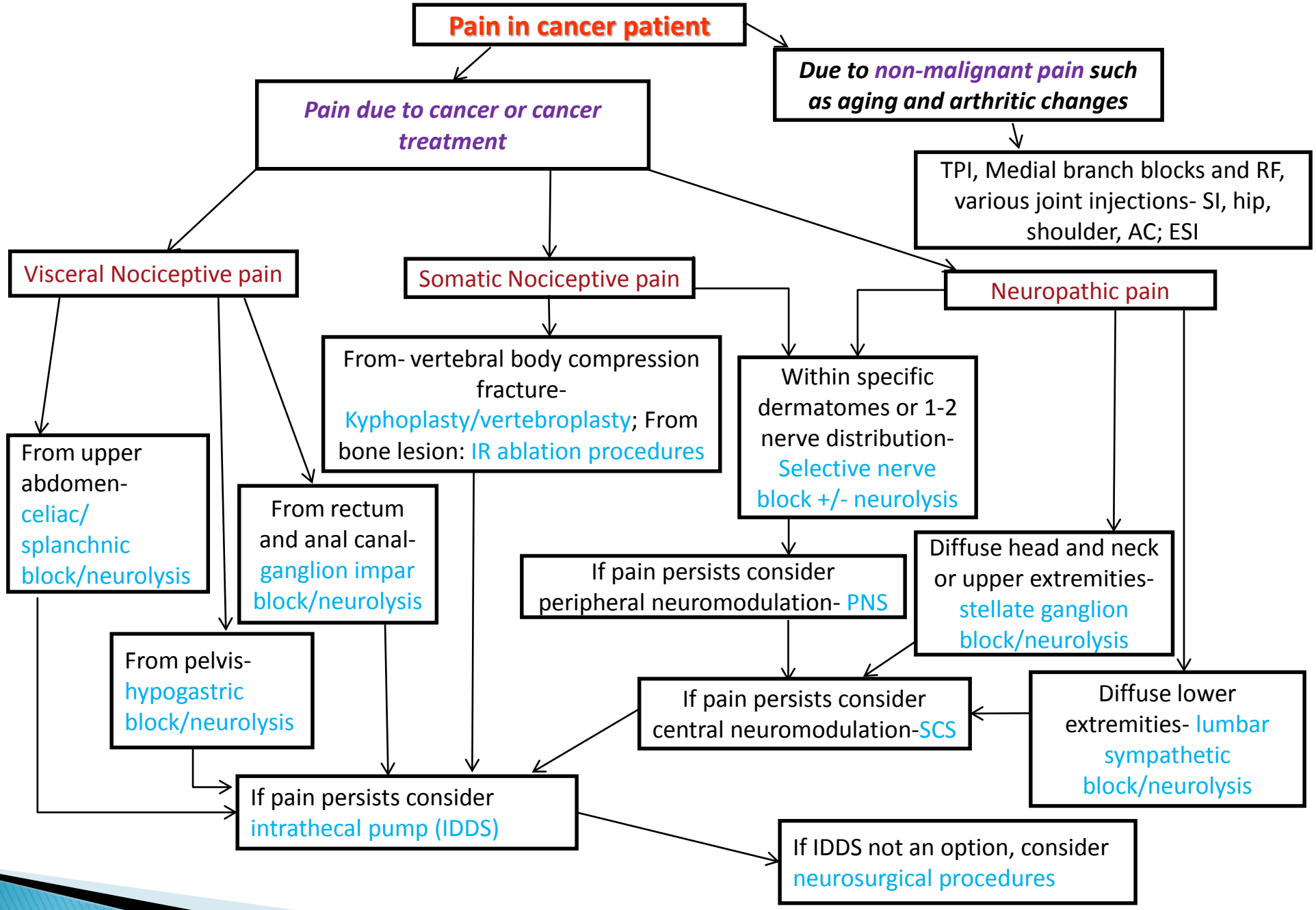
- Multiple options with external pulse generator available, allowing for percutaneous approach with minimal incisions
- Temporary 60 day option
- Consider if nerve blocks provide temporary relief and neurolysis may not be an option
- PNS may be preferable to SCS due to less invasive nature/ lower risk
- Ensure patient can reach or has a caretaker that can reach the area for external pulse generator/battery
- Understand MRI restrictions

Intrathecal drug delivery

- Pain due to advanced cancer, with a minimum life expectancy of >3 months
- Refractory to conventional management
  - intractable drug adverse effects or
  - unsatisfactory analgesia
- VAS ≥ 5, despite 200 oral MME/day

Implantable drug delivery systems (IDDS) after failure of comprehensive medical management (CMM) can palliate symptoms in the most refractory cancer pain patients.

Journal of Palliative Medicine. Volume 8, Number 4, 2005. **S. Narang, S. Srinivasan, N. Nguyen, D. Palombi, E.L. Ross**


Pain in cancer patient
Due to non-malignant pain such as aging and arthritic changes
Pain due to cancer or cancer treatment
TPI, Medial branch blocks and RF, various joint injections- SI, hip, shoulder, AC; ESI
Visceral Nociceptive pain
Somatic Nociceptive pain
Neuropathic pain
From- vertebral body compression fracture- Kyphoplasty/vertebroplasty; From bone lesion: IR ablation procedures
Within specific dermatomes or 1-2 nerve distribution- Selective nerve block +/- neurolysis
From upper abdomen- celiac/ splanchnic block/neurolysis
From rectum and anal canal- ganglion impar block/neurolysis
If pain persists consider peripheral neuromodulation- PNS
Diffuse head and neck or upper extremities- stellate ganglion block/neurolysis
From pelvis- hypogastric block/neurolysis
If pain persists consider central neuromodulation-SCS
Diffuse lower extremities- lumbar sympathetic block/neurolysis
If pain persists consider intrathecal pump (IDDS)
If IDDS not an option, consider neurosurgical procedures

- Singh ☺

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REFERRALS

- Who's referring? Who do you want to refer?
  - Oncologist
  - Palliative/supportive care
  - Patients/self-referral
  - Others
- How can they see you?
  - Tumor boards
  - Grand rounds
  - Flyers
  - Website
  - Be available
- How can they schedule?
  - Know your own process. Is there room for improvement?

How to refer to Cancer Pain Service?

- Winship Schedulers can directly schedule using the "**Pain Treatment Referral**" in appointment type in GE
- Refer via **TEC MD Internal Referral to Emory Pain Center**, be sure to specify "Cancer pain"
- Send any of us a **message in EMR or email to one of the cancer pain MDs** (Vinita Singh, Yawar Qadri, Nan Xiang or Margaret Riso)
- Send a message to **Pain Center MOT Admin pool**, with *subject- "Referral for Cancer Pain"*.
- Patient can call at **404 686 2410** (No referral needed. As long as they say 'cancer related pain', they will be scheduled with one of us.)
- Call or text **Vinita Singh at 615 419 5609**

Triggers for referral to Cancer Pain Service

- PROMIS distress screening
  - *Any patient with persistent pain score >6/10 on NPRS* Plus
    Fair to poor physical health or quality of life

  - Interventions (procedures) to optimize pain control and minimize pharmacology
  - Pain is the primary symptom or needing chronic medication support for pain control.
  - For patients in remission, maintained on chronic opioids, essential to clarify that they will be thoroughly evaluate and treated with multiple modalities with a goal to minimize opioids overall.
  - Chronic pain management counseling, Cognitive Behavioral Therapy (CBT) for pain
  - Patients requesting acupuncture

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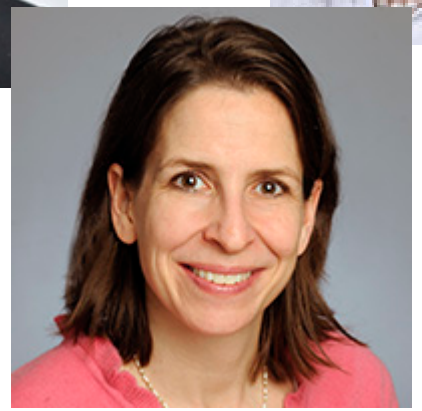
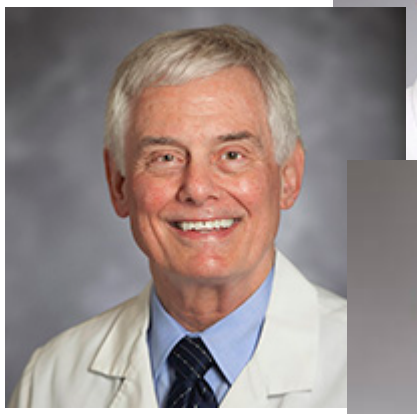
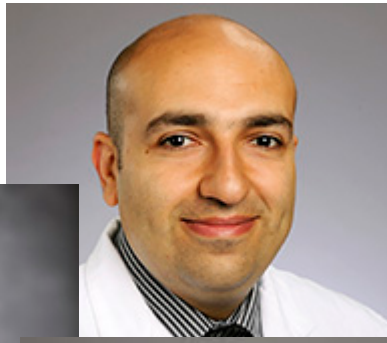
CANCER PAIN MANAGEMENT: INSTITUTIONAL INTERDISCIPLINARY PARTNERS



Pain

Palliative care

Oncology

Patient

Psychiatry

PM & R

Interventional radiology

Neurosurgery

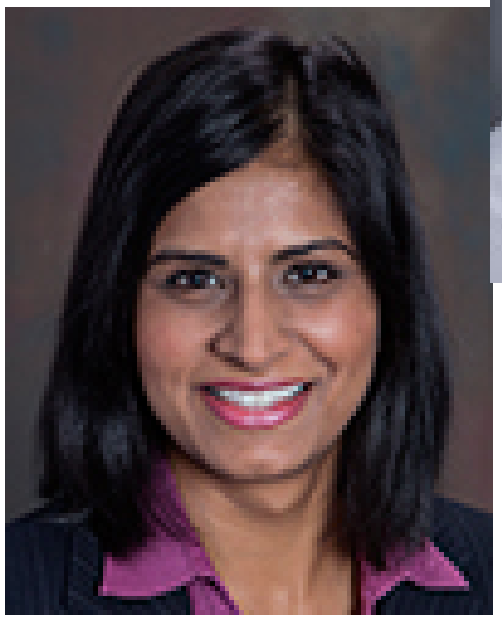
Interdisciplinary efforts at Emory

- Have biweekly multidisciplinary pain meeting with representatives from Anesthesia/Pain, supportive care/palliative care, addiction/pysch, interventional radiology, etc.
  - Understand each others roles
  - Discuss challenging pain cases
  - Care-coordination
  - Research

HOW TO BUILD CANCER PAIN SERVICE-STEPS

- Understand cancer pain
- Know how to treat cancer pain
  - Guidelines on treatment of cancer pain
  - Identify mentors
  - Network/conferences
- Understand and build relationship with your referring providers
- There will be challenges: identify institutional partners
  - Interdisciplinary efforts
- **Reassess as you grow**

Your Cancer Pain Team at Emory



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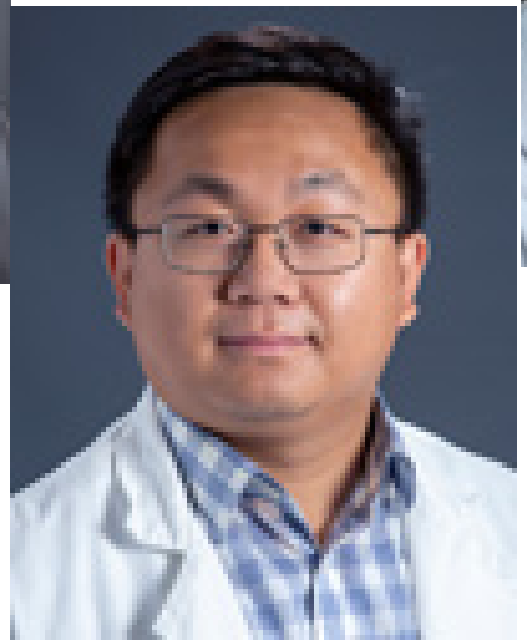

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