

Building the Bridge: A Framework for Collaborative Referral Pathways between Palliative Medicine and Interventional Pain Specialists

Suresh Srinivasan, MD^{1*}, Kiran Khurshid MD²

¹Department of Pain Medicine, Trinity Health System, Steubenville, OH, USA (ORCID: 0000-0002-1363-4518)

²Internal Medicine Residency Program, Trinity Health System, Steubenville, OH, USA (ORCID : 0000-0002-4897-6059)

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***Corresponding author:** Suresh Srinivasan, MD, Department of Pain Medicine, Trinity Health System, Steubenville, OH, USA (ORCID: 0000-0002-1363-4518)

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ABSTRACT

Pain remains one of the most challenging symptoms in patients with serious and advanced illness. Palliative medicine teams frequently manage complex pain using pharmacologic and nonpharmacologic approaches, while interventional pain specialists can provide targeted procedures for selected patients with refractory or anatomically defined pain. Despite complementary expertise, referral between these disciplines is not always straightforward. Patients may be referred late in the course of illness, clinicians may be unfamiliar with available procedures, and communication regarding prognosis, functional status, goals of care, and procedural feasibility may be incomplete.

This narrative review proposes a practical framework for collaboration between palliative medicine and interventional pain services. The framework is designed to help clinicians recognize patients who may benefit from an interventional pain consultation while preserving the central role of individualized goals-of-care discussions. Potential interventions include neurolytic and anesthetic nerve blocks, intrathecal drug delivery, vertebral augmentation, and other targeted procedures. Rather than establishing a rigid clinical decision rule, the proposed pathway provides a structured approach to recognizing referral triggers, performing a focused bedside assessment, discussing goals and expectations, communicating a specific clinical question to the interventional pain team, and maintaining follow-up after consultation.

Early and appropriate referral does not necessarily mean that a procedure will be performed. In some patients, the most appropriate recommendation may be continued medical management or avoidance of an intervention because of prognosis, procedural risk, functional status, or patient preference. A collaborative pathway can therefore serve not only to increase access to procedures but also to improve communication and ensure that procedural options are considered within the broader goals of serious-illness care.

Keywords: Cancer pain; Palliative medicine; Interventional pain; Pain management; Intrathecal drug delivery; Neurololysis; Vertebral augmentation; Hospice; Multidisciplinary care

INTRODUCTION

Pain is common in patients living with advanced cancer and other serious illnesses and can significantly affect mobility, sleep, mood, function, and quality of life. For many patients, symptoms can be managed with a combination of pharmacologic therapy, rehabilitation, psychological support, radiation or systemic treatment, and other disease-directed approaches. However, some patients continue to experience significant pain despite these measures or develop adverse effects that limit further escalation of systemic analgesics.

Interventional pain management provides another set of tools for selected patients. Depending on the pain syndrome and underlying pathology, these may include diagnostic or therapeutic nerve blocks, neurolytic procedures, intrathecal drug delivery, vertebroplasty or kyphoplasty, and other targeted interventions. Evidence exists for several of these approaches in cancer-associated pain, although the strength of evidence varies considerably by procedure and clinical setting.¹⁻⁵

Palliative medicine and interventional pain therefore address overlapping aspects of the same clinical problem from different perspectives. Palliative clinicians frequently have a longitudinal understanding of the patient's illness, prognosis, symptom burden, functional status, and goals. Interventional pain specialists bring expertise in identifying pain generators and determining whether a procedure is technically feasible and clinically appropriate.

The challenge is often not whether these services can work together, but **when and how the referral should occur**. Patients may reach an interventional pain consultation only after repeated medication escalation, prolonged hospitalization, or substantial functional decline. Conversely, not every patient with cancer-related pain requires an intervention, and an overly procedural approach may expose patients to burdens that do not align with their goals. This article proposes a practical framework for improving communication and referral between palliative medicine and interventional pain services. The intent is not to create a validated clinical decision rule or recommend routine intervention. Instead, the framework provides clinicians with a structured way to recognize potentially appropriate referrals while maintaining individualized decision-making.

BACKGROUND

Interventional approaches to refractory pain

Interventional procedures may be particularly useful when pain has a recognizable anatomic or pathophysiologic target, when systemic medications provide inadequate relief, or when medication-related adverse effects become limiting.

Neurolytic and anesthetic nerve blocks

Neurolytic procedures can interrupt nociceptive transmission from selected visceral or somatic structures. Celiac plexus neurolysis, for example, has been studied in patients with unresectable pancreatic cancer and has demonstrated improvements in pain compared with systemic analgesic therapy in randomized data.² Sympathetic blocks have also been incorporated into recommendations for selected visceral cancer pain syndromes.³

Other targeted procedures may be considered according to the location and phenotype of pain. Ganglion impar interventions, for example, have been described for refractory pelvic and perineal cancer-related pain, although the available literature remains largely observational.⁴

The important clinical point is that the usefulness of a nerve block depends on whether the patient's pain corresponds to a plausible target. A high opioid requirement alone does not establish an indication for a procedure.

Intrathecal drug delivery

Intrathecal drug delivery systems can provide analgesic medications directly within the cerebrospinal fluid and may reduce systemic medication exposure in selected patients with refractory pain. In a randomized trial involving patients with refractory cancer pain, intrathecal drug delivery combined with comprehensive medical management was associated with improvements in pain-related outcomes and drug-related toxicity compared with comprehensive medical management alone.¹

These systems require careful patient selection, procedural expertise, device management, and longitudinal follow-up. They may therefore be difficult to integrate into care when referral occurs very late in the illness.

Vertebral augmentation

Vertebral compression fractures and metastatic involvement of the spine can produce severe mechanical pain and functional limitation. Vertebroplasty and kyphoplasty may be considered in appropriately selected patients when pain is related to structural vertebral pathology and conservative measures are inadequate.

The decision is individualized and depends on the underlying lesion, spinal stability, neurologic status, procedural risk, expected prognosis, and the patient's goals. The presence of a vertebral lesion alone does not establish an indication for augmentation.

Other interventions

Depending on the pain syndrome, additional procedures may include epidural or facet interventions, radiofrequency techniques, peripheral nerve blocks, sympathetic blocks, and other image-guided procedures.

The evidence base is heterogeneous. A 2023 narrative review noted that although interventional techniques are increasingly discussed as part of cancer pain management, evidence specifically addressing optimal timing remains limited.⁵ This uncertainty reinforces the need for individualized consultation rather than rigid procedural thresholds.

Why appropriate patients may not reach interventional pain services

The gap between identifying refractory pain and obtaining an interventional consultation may occur for several reasons.

First, clinicians may be unfamiliar with the range of procedures available. A hospitalist, oncologist, or palliative clinician may recognize that a patient's pain is poorly controlled without knowing whether a specific intervention exists for that pain phenotype.

Second, referrals may occur late. When a patient's functional status has deteriorated substantially, the potential benefit of an intervention may be reduced by procedural risk, limited life expectancy, logistical challenges, or inability to tolerate the intervention.

Third, referral communication may focus heavily on medication history while providing limited information about the actual pain syndrome. A list of opioid doses does not necessarily tell the proceduralist whether the pain is visceral, neuropathic, mechanical, somatic, or mixed.

Fourth, patients may have misconceptions about procedures. Some may believe that an intervention represents a major operation, while others may expect a procedure to eliminate pain completely.

Finally, transitions between palliative care, oncology, hospital medicine, hospice, and procedural services can create fragmented communication. A recent systematic review identified patient-, clinician-, and system-level barriers to interventional pain management in cancer care, including knowledge gaps, fragmented coordination, and limited access to standardized pathways.⁶

These barriers suggest that improving access may require more than simply making a referral option available.

Structural and Communication Barriers

A successful referral requires more than identifying a patient with pain.

The interventional pain specialist needs to understand:

- What is causing the pain?
- What has already been tried?
- What is the patient's current functional status?

- What is the expected disease trajectory?
- What does the patient hope to accomplish?
- What procedural burden is acceptable?
- Is the primary goal pain reduction, improved mobility, reduced medication burden, improved alertness, or another patient-defined outcome?

Likewise, the palliative clinician needs to understand that the procedural consultation may result in several different outcomes. These may include a procedure, a diagnostic block, a recommendation for additional imaging, continued medical therapy, or a decision that procedural risk outweighs expected benefit.

A referral pathway should therefore be designed around **clinical communication rather than procedural volume**.

A Proposed Collaborative Referral Framework

We propose a five-step framework:

1. **Recognize a potential referral trigger**
2. **Perform a focused bedside assessment**
3. **Discuss goals and expectations with the patient**
4. **Communicate a specific clinical question to interventional pain**
5. **Close the loop after consultation**

This framework is intended as a practical clinical tool rather than a validated decision rule.

Step 1: Recognize a Referral Trigger

A referral can be considered when one or more of the following are present:

Persistent clinically significant pain despite multimodal treatment

Pain remains functionally or symptomatically significant despite reasonable pharmacologic and nonpharmacologic management.

Dose-limiting medication adverse effects

Pain may be partially responsive to systemic medications, but further escalation is limited by sedation, constipation, nausea, delirium, cognitive effects, respiratory concerns, or other adverse effects.

A focal or anatomically defined pain generator

Examples include localized visceral pain, focal neuropathic pain, pelvic or perineal pain, or mechanical pain associated with vertebral pathology.

A patient preference to preserve alertness or function

Some patients prioritize remaining awake, interactive, or mobile and may prefer consideration of strategies that could reduce reliance on escalating systemic medications.

Mechanical pain affecting function

Patients with selected structural causes of pain may benefit from evaluation for an intervention when the underlying anatomy is amenable to treatment.

Importantly, these triggers should prompt **consideration of consultation**, not automatic intervention.

Step 2: Focused Bedside Screening

Before placing a referral, the referring clinician can perform a brief assessment.

Pain phenotype

Document:

- Location
- Quality
- Severity
- Temporal pattern
- Radiation
- Provoking and relieving factors
- Neuropathic features
- Mechanical features
- Visceral features
- Associated neurologic symptoms

Current treatment

Document:

- Current analgesics
- Recent medication changes
- Nonopioid therapies
- Adjuvant medications
- Radiation or disease-directed treatment
- Previous procedures
- Response to prior interventions

Functional status

Document the effect of pain on:

- Ambulation
- Transfers
- Sleep
- Activities of daily living
- Oral intake
- Communication
- Participation in meaningful activities

Clinical context

Include:

- Underlying diagnosis
- Disease status
- Relevant imaging
- Expected clinical trajectory
- Anticoagulation or bleeding risk
- Infection risk
- Relevant laboratory abnormalities
- Performance status

Patient priorities

Ask what improvement would matter most.

For example:

“If we could improve one thing about your pain, what would make the biggest difference to you?”

The answer may be lower pain intensity, improved mobility, less sedation, fewer medications, improved sleep, or simply being able to spend time with family.

Step 3: Shared Decision-Making

Procedural consultation should occur within the patient's overall goals of care.

The patient should understand that an interventional consultation does not guarantee that a procedure will be recommended.

Potential benefits may include:

- Reduced pain
- Improved mobility
- Reduced systemic medication requirements
- Fewer medication-related adverse effects
- Improved ability to participate in meaningful activities

- Potential burdens include:
- Travel or transfer to a procedural center
- Need for imaging or additional testing
- Procedural discomfort
- Bleeding or infection
- Neurologic or other procedure-specific complications
- Hospitalization or monitoring
- Device maintenance for certain interventions
- Limited or temporary benefit

The appropriate question is therefore not simply, “Can something be done?”

It is:

“Would the expected benefit of an intervention meaningfully contribute to this patient's goals, given the potential burdens and the patient's overall illness?”

Step 4: Standardized Referral Communication

A standardized referral can reduce unnecessary back-and-forth communication.

A suggested referral template is:

Diagnosis and clinical context

- Primary diagnosis
- Relevant metastatic or structural disease
- Current disease status
- Prognostic context when clinically appropriate

Pain characteristics

- Location
- Phenotype
- Severity
- Duration
- Functional impact

Treatments attempted

- Current analgesic regimen
- Previous medications
- Previous procedures
- Radiation or other disease-directed treatment
- Response and adverse effects

Patient goals

- Desired functional outcome

- Medication-related concerns
- Preferences regarding procedures
- Relevant goals-of-care considerations

Clinical question

Rather than:

“Please evaluate for pain procedure.”

A more useful referral might state:

“Patient with metastatic pancreatic cancer has persistent upper abdominal visceral pain despite multimodal therapy. Opioid escalation has been limited by sedation and constipation. The patient's priority is remaining alert enough to interact with family. Would a celiac plexus or other targeted intervention be appropriate?”

The second referral provides the proceduralist with a clinical question that can be answered.

Step 5: Close the Loop

The referral pathway should not end when the interventional pain consultation occurs.

The referring team should know:

- Whether an intervention was recommended
- What intervention was performed, if any
- Expected timeline of benefit
- Recommended medication changes
- Follow-up plan
- Who will manage subsequent pain medications
- Whether additional procedures or reassessment are anticipated

This is particularly important for patients transitioning between hospital-based palliative care, outpatient palliative care, oncology, pain medicine, and hospice.

A practical bedside screening tool

A concise bedside checklist could be incorporated into an electronic referral pathway:

Consider interventional pain consultation when

Pain remains clinically significant despite multimodal therapy

Medication escalation is limited by adverse effects

Pain has a focal or potentially targetable anatomic generator

Mechanical pain is limiting mobility or function

Patient prioritizes alertness or function and wishes to explore alternatives

The expected time to benefit is compatible with the patient's clinical trajectory

The patient is willing to consider the procedural burden

Before referral, document

Pain phenotype and location

Current and previous analgesic therapies

Functional impact

Relevant imaging

Disease status/prognostic context

Anticoagulation/infection considerations

Patient-defined goal

Specific clinical question for the procedural team

This checklist should support—not replace—clinical judgment.

Shared decision-making across the disease trajectory

Timing is particularly important in patients with advanced illness.

A common pattern is to progressively escalate systemic medications until adverse effects become unacceptable, followed by referral when the patient's functional status has already deteriorated. At that point, a procedure may be technically possible but clinically less useful.

A more collaborative approach is to consider interventional consultation earlier when the clinical picture suggests that an intervention could reasonably contribute to the patient's goals.

This does not mean that procedures should routinely be performed earlier. Rather, **consultation and consideration may occur before the window for potential benefit has narrowed substantially.**

A 2023 narrative review highlighted the limited quality of evidence regarding optimal timing of interventional cancer pain procedures and cautioned against assuming that earlier intervention is universally appropriate.⁵ This distinction is important: the proposed pathway promotes earlier **consideration**, not automatic early intervention.

Composite clinical vignettes

Case 1: Visceral pain with medication-limiting adverse effects

A patient with advanced pancreatic cancer develops persistent upper abdominal pain despite systemic analgesics and adjuvant therapy. Increasing opioid doses provide incomplete relief but result in increasing sedation and constipation. The patient remains interested in spending meaningful time with family and wishes to remain as alert as possible.

A palliative medicine clinician identifies a potentially targetable visceral pain syndrome and discusses interventional consultation.

The pain specialist reviews the clinical history and imaging and determines whether a celiac plexus or related intervention is appropriate.

The important feature of this case is not that a procedure is necessarily performed. The value of the referral is that a procedural option is considered before medication-related toxicity becomes the dominant limitation.

Case 2: Mechanical vertebral pain

A patient with metastatic malignancy develops severe focal back pain associated with a vertebral lesion. Pain worsens with movement and substantially limits transfers and ambulation.

The palliative team recognizes that the pain has a mechanical component and communicates the relevant imaging and functional limitations to the interventional service.

The proceduralist evaluates whether vertebral augmentation or another intervention is technically and clinically appropriate.

If the patient is not a candidate because of anatomy, instability, neurologic findings, prognosis, or procedural risk, the consultation can still be valuable because it clarifies why an intervention is not appropriate and allows the team to focus on alternative strategies.

Implementation in clinical practice

A collaborative referral pathway does not necessarily require creation of a new service.

Potential implementation strategies include:

Electronic health record referral templates

A standardized referral order can prompt clinicians to document pain phenotype, relevant imaging, prior treatment, goals, and the specific clinical question.

Multidisciplinary education

Short educational sessions for hospitalists, oncologists, palliative clinicians, and other referring providers can introduce common interventional procedures and potential referral triggers.

Regular interdisciplinary communication

In institutions with sufficient volume, brief case discussions between palliative and interventional pain clinicians may help identify appropriate referrals.

Clear ownership of medication management

The teams should clarify who will manage systemic analgesics after an intervention, particularly when a patient transitions between inpatient and outpatient settings.

Hospice coordination

For patients receiving or considering hospice, procedural planning should be coordinated with the hospice team. Medicare hospice coverage is based on an individualized plan of care, and hospice agencies are responsible for services related to the terminal illness under the hospice benefit.⁷ The practical feasibility of an intervention therefore requires coordination among the patient, procedural team, referring clinicians, and hospice organization rather than assumptions about coverage or payment.

Proposed quality measures

If implemented as a clinical pathway, several measures could be tracked to determine whether it improves care.

Process measures

- Number of interventional pain referrals
- Percentage of referrals containing complete clinical information
- Time from referral to consultation
- Time from consultation to procedure when intervention is recommended
- Percentage of referrals resulting in intervention versus noninterventional recommendations

Clinical measures

- Change in pain severity
- Change in opioid requirements
- Medication-related adverse effects
- Functional outcomes
- Ability to participate in desired activities
- Hospital or emergency department utilization

Patient-centered measures

- Patient-reported satisfaction
- Goal attainment
- Quality of life
- Patient understanding of treatment options
- Concordance between the intervention and stated goals

These measures could provide the basis for future prospective evaluation of the pathway.

LIMITATIONS

Several limitations should be recognized.

First, the proposed pathway has not been prospectively validated. The five-step framework represents a clinical model based on existing literature and multidisciplinary reasoning rather than a validated prediction tool.

Second, evidence for interventional cancer pain procedures varies substantially by intervention, pain syndrome, and patient population. Results from one procedure should not be generalized to another.

Third, access to interventional pain services varies considerably between institutions. Some centers have dedicated cancer pain programs, whereas others may have limited procedural capacity.

Fourth, procedural feasibility depends on local expertise, equipment, staffing, anticoagulation management, infection risk, patient performance status, and expected survival.

Finally, increasing referrals should not become an indirect measure of pathway success. A well-functioning pathway may appropriately result in **fewer procedures for some patients** if consultation identifies that intervention would not meaningfully contribute to the patient's goals.

FUTURE DIRECTIONS

Future studies should evaluate whether structured referral pathways improve access to appropriate interventional pain consultation and whether they affect patient-centered outcomes.

Potential areas for investigation include:

1. Prospective evaluation of standardized referral criteria.
2. Time from recognition of refractory pain to interventional consultation.
3. Patient-reported goal attainment following intervention.
4. Changes in opioid exposure and medication-related adverse effects.
5. Functional outcomes rather than pain intensity alone.
6. Healthcare utilization before and after pathway implementation.
7. Differences in access across hospitals and patient populations.
8. The role of electronic health record decision support.
9. Coordination of procedures with hospice and home-based palliative care.
10. Cost and resource implications of multidisciplinary referral pathways.

Importantly, future research should evaluate not only whether more patients receive procedures, but whether patients receive **the right intervention—or appropriately avoid intervention—based on their goals and clinical circumstances**.

CONCLUSION

Patients with serious illness and refractory pain may benefit from a coordinated approach between palliative medicine and interventional pain specialists. The two disciplines bring complementary expertise: palliative medicine emphasizes symptom burden, function, prognosis, and patient goals, while interventional pain provides expertise in targeted procedural treatment of selected pain syndromes.

The proposed five-step framework—recognizing referral triggers, performing focused screening, discussing goals, communicating a specific clinical question, and closing the follow-up loop—offers a practical way to strengthen this collaboration.

The goal is not to increase procedural volume. It is to ensure that appropriate patients are identified early enough for an informed consultation and that procedural options are considered within the context of the patient's overall illness and priorities.

A successful pathway should ultimately make the right option easier to reach—whether that option is an intervention, continued medical management, or a decision not to pursue a procedure.

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