

# NIH Pain Consortium

Centers of Excellence in Pain Education



## Post-Mastectomy Pain Syndrome

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## Introduction

Pam was diagnosed with breast cancer approximately one year ago. Pam underwent treatment including a bilateral mastectomy and subsequent breast reconstruction. Now she is experiencing pain that she feels should be improving.

Spend some time learning about Post-Mastectomy Pain Syndrome (PMPS) and Pam's medical history.

You'll need to review Pam's interview to get important information about her symptoms and their interference with her activities.

Pam also decided to attend a support group. You'll be able to review their first meeting to learn valuable clinical pearls about PMPS and Pam's experiences.

Finally, this module will follow-up with Pam and make some recommendations for her care.

## Learning Objectives

1. Describe the epidemiology of post-mastectomy pain syndrome (PMPS) and risk factors for development in women with breast cancer.
2. Identify signs and symptoms of PMPS related to quality and location of symptoms, functional and psychosocial sequelae.
3. Develop an interdisciplinary treatment approach to a patient with PMPS.
4. Identify non-pharmacologic and pharmacologic treatment modalities for PMPS.
5. Identify when referral to a specialist is appropriate.

## Learn About Post-Mastectomy Pain Syndrome (PMPS)

### Definition

Post-Mastectomy Pain Syndrome (PMPS) is defined as “chronic pain that begins after total mastectomy or quadrantectomy and persists for more the three months after surgical procedure.”

There are some key details about Post-Mastectomy Pain Syndrome that will help you anticipate, identify, and treat this disorder.

### Epidemiology<sup>1</sup>

The risk of developing PMPS largely depends on type of treatment.

- Mastectomy + chemotherapy: 15%
- Mastectomy alone: 23%
- Lumpectomy + radiation: 27%
- Lumpectomy + radiation + chemotherapy: 33%

Other risk factors include: younger age, high body mass index, marital status, and history of other pain syndromes.

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<sup>1</sup> Carpenter JS, et al. J Clin Epidemiol 1998;51(12):1285-1292.

Couceiro TCdM, et al. Pain Manage Nurs 2014;15(4):731-737.

## Pathphysiology

Numerous theories including, in whole or part, the following:

- a) [primary hyperalgesia](#)
- b) spinal and supraspinal neuronal sensitization
- c) musculoskeletal changes
- d) lymphatic changes
- e) dissection of intercostobrachial nerve
- f) intraoperative damage to axillary nerves

Click [here](#) to learn more about the anatomy and pathophysiology of PMPS.

Click [here](#) to review breast cancer types.

## Diagnosis<sup>2</sup>

One of 6 types of pain identified:

- 1) Intercostobrachial neuralgia
- 2) Painful [neuroma](#) over the scar
- 3) Phantom breast pain
- 4) Phantom nipple pain
- 5) Other neurogenically mediated pain syndromes

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<sup>2</sup> Beyaz S, et al. Chin Med J 2016;129:66-71.

One or more sites of pain symptoms:

- 1) Arm or axilla (71.4%)
- 2) Scar (54.8%)
- 3) Chest wall (22.6%)
- 4) Shoulder (20.2%)
- 5) Phantom (14.3%)

Other persistent post-mastectomy pain symptoms not of a neurogenic nature may include:

- 1) Lymphedema
- 2) Musculoskeletal pain

## Treatment<sup>3</sup>

### **Non-pharmacotherapy**

- [Autologous fat grafting](#)
- [Acupuncture](#)
- [Thoracic paravertebral block](#) (preventive)
- [Rehabilitation](#)
- [Counseling](#)

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<sup>3</sup> Larsson IM, et al. Breast J 2017;23(3):338-343. Quinlan-Woodward J, et al. Oncol Nurs Forum 2016;43(6):725-732. Morel V, et al. PLoS One 2016;11(4):e0152741. doi: 10.1371/journal.pone.0152741. De Groef A, et al. Arch Phys Med Rehab 2015;96(6):1140-53. Cramer H, et al. Cochr Database Syst Rev 2017:CD010802.

## Pharmacotherapy

- [Amitriptyline](#)
- [Capsaicin](#)
- [Duloxetine](#)
- [Gabapentin](#)
- [Memantine](#) (preventive)
- [Opioids](#)
- [Venlafaxine](#)

## Test Your Knowledge: PMPS Incidence

The incidence of PMPS varies depending on the type of breast cancer treatment.

What treatment do you feel is associated with the **lowest incidence** of PMPS?

1. [Mastectomy, chemotherapy, and radiation](#)
2. [Lumpectomy and radiation](#)
3. [Mastectomy alone](#)
4. [Mastectomy and chemotherapy](#)

What treatment do you feel is associated with the **second lowest incidence** of PMPS?

1. [Mastectomy, chemotherapy, and radiation](#)
2. [Lumpectomy and radiation](#)
3. [Mastectomy alone](#)
4. [Mastectomy and chemotherapy](#)

What treatment do you feel is associated with the **second highest incidence** of PMPS?

1. [Mastectomy, chemotherapy, and radiation](#)
2. [Lumpectomy and radiation](#)
3. [Mastectomy alone](#)
4. [Mastectomy and chemotherapy](#)

What treatment do you feel is associated with the **highest incidence** of PMPS?

1. [Mastectomy, chemotherapy, and radiation](#)
2. [Lumpectomy and radiation](#)
3. [Mastectomy alone](#)
4. [Mastectomy and chemotherapy](#)

### Test Your Knowledge: PMPS Pain Location

The location of pain may vary dramatically in PMPS.

What location do you feel has the **lowest incidence** for PMPS?

1. [Scar](#)
2. [Arm or axilla](#)
3. [Shoulder](#)
4. [Chest wall](#)

What location do you feel has the **second lowest incidence** for PMPS?

1. [Scar](#)
2. [Arm or axilla](#)
3. [Shoulder](#)
4. [Chest wall](#)

What location do you feel has the **second highest incidence** for PMPS?

1. [Scar](#)
2. [Arm or axilla](#)
3. [Shoulder](#)
4. [Chest wall](#)

What location do you feel has the **highest incidence** for PMPS?

1. [Scar](#)
2. [Arm or axilla](#)
3. [Shoulder](#)
4. [Chest wall](#)

## Pam's Medical History

### History of Present Illness (HPI)

41-year-old Caucasian female presents with chief complaint of pain in chest, arm, and shoulder. Completed 6 cycles of TAC (docetaxel, doxorubicin, cyclophosphamide) with the last cycle ending 3 months ago. She is here for primary care followup and to discuss her pain symptoms.

### Medications

- a) Tamoxifen: 20 mg by mouth daily
- b) Goserelin: 3.6 mg subQ every 28 days
- c) Lorazepam: 2 mg by mouth at bedtime as needed
- d) Oxycodone ER: 20 mg 1 tablet by mouth every 12 hrs
- e) Oxycodone/acetaminophen: 5/325 mg 1 tab Q4-6 hours PRN (take on average 2 doses daily)
- f) Ibuprofen: (OTC) 400 mg PRN take 2-3 doses on most days
- g) Senna-S: (docusate-senna) 2 tabs by mouth every morning

### Past Surgical History

Bilateral skin sparing mastectomy

- Axillary node dissection
- Reconstruction with tissue expanders and breast implants

## Family History

Father: 72 and healthy (high blood pressure); still working fulltime.

Mother: 68 and relatively healthy (high blood pressure, heartburn, depression, high cholesterol). Retired and working part-time.

No known family history of breast cancer.

## Social History

- Denies tobacco
- Occasional alcohol intake socially
- Denies recreational drug use
- No current formal diet
- Moderate caffeine intake
- Limited exercise
- Sexually active, condoms for contraception

## Labs

<b>Test</b>	<b>Result</b>	<b>Reference Range</b>
Hemoglobin	13	12-16.5 (g/dL)
Hematocrit	34	36-50 (%)
RBC	4.2	4-5.5 (x 10 <sup>6</sup> /mL)
WBC	4	4-10 (x 10 <sup>3</sup> /mm <sup>3</sup> )

<b>Platelet</b>	<b>200</b>	<b>100-450 (x 10<sup>3</sup>/μL)</b>
<b>Sodium</b>	<b>139</b>	<b>135-147 (mEq/L)</b>
<b>Potassium</b>	<b>4.2</b>	<b>3.5-5.2 (mEq/L)</b>
<b>Chloride</b>	<b>101</b>	<b>95-107 (mEq/L)</b>
<b>CO<sub>2</sub></b>	<b>24</b>	<b>20-29 (mg/dL)</b>
<b>Urea Nitrogen</b>	<b>18</b>	<b>7-20 (mg/dL)</b>
<b>Creatinine</b>	<b>0.6</b>	<b>0.5-1.4 (mg/dL)</b>
<b>Glucose</b>	<b>89</b>	<b>64-128 (mg/dL)</b>
<b>HgbA1c</b>	<b>5.2</b>	<b>&lt; 5.7 (%)</b>
<b>Vitamin B12</b>	<b>312</b>	<b>200-900 (pg/mL)</b>
<b>Thyroid Stim Hormone</b>	<b>2.7</b>	<b>0.4-4 (mIU/L)</b>

## Vitals

<b>Test</b>	<b>Result</b>
Blood Pressure	112/74 mmHg
Heart Rate	78 (beats/min)
Respiratory Rate	20 (breaths/min)
Temperature	98°F (36.6° C)
Height	65 inches
Weight	140 lb (63 kg)

## Physical Examination

**GEN:** Alert & oriented x 3; Affect & speech appropriate, hunched posture.

**HEENT:** PERRLA, conjunctiva anicteric.

**ABD:** Decreased bowel sounds.

**PSYCH/NEURO:** Fatigue, mildly anxious and depressed upon questioning.

**BREAST EXAM:** No lumps, breast dimpling, or puckering. No redness, scaling or inflammation. No signs of nipple discharge.

**SKIN:** Surgical scars healing well.

**EXTREMITIES:** Mild swelling noted in both arms (R > L). Patient does not have full shoulder ROM bilaterally and guarding present.

## Review of Systems

General: feels fatigued and depressed

HEENT: no headaches, visual changes, sore throat

CV/Pulm: no shortness of breath or palpitations. Does describe musculoskeletal pain over anterior chest

GI/GU: mild constipation, no urinary retention, incontinence, nausea, vomiting, or diarrhea

CNS: no dizziness, confusion, memory impairment, loss of consciousness

Ext: no swelling

## Pain Symptom Assessment

The assessment uses a 10-point numeric rating scale. The first assessment covers how intensely Pam feels pain in different contexts.

<b>Severity</b>	<b>Score</b>
Now	5/10
Average	6/10
Worst	9/10
Least	5/10

The second assessment covers how the pain Pam feels interferes with different parts of her life.

<b>Interference With:</b>	<b>Score</b>
Activity	8/10
Mood	6/10
Sleep	5/10
Work	3/10
Relations	10/10
Enjoyment	8/10

### *Characteristics*

Stabbing, sharp, aching, and tender over lateral aspect of chest wall, shoulder, and occasionally the arm. It is worse in the morning and with strenuous activity. Burning, tingling, and numbness in hands and feet but improving. Aggravated by light touch, pressure, trigger point (underarm), exposure to cold air, raising arms above 90 degrees. Alleviated by meds, rest, and warm baths.

### **Past Medical History**

Generalized anxiety disorder

Depression

Breast cancer (Stage 3C invasive ductal carcinoma)

## Test Your Knowledge: Morphine Equivalency

Which of the following best represents Pam's current morphine equivalent daily dose?

1. [25 mg](#)
2. [50 mg](#)
3. [75 mg](#)
4. [100 mg](#)

## Pam's Interview

The following describe videos of Pam answering the questions posed before each description and transcription.

### How would you describe your pain?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“Okay, a typical day for me, I wake up in the morning. I usually wake up sore, especially from sleeping that night. I get ready for work, get the kids ready, then go about my day at work.*

*If I'm up moving a lot and constantly going, my pain will pretty much stay with me during the day. If I'm able to kind of sit and rest maybe a little bit, it does subside to a certain point, but it seems like it's always lingering. That soreness is usually always within my chest area.*

*Since I finished treatment, probably after two or three chemo treatments, I've noticed some numbing and burning feelings in my fingertips and then in my toes. It kind of feels like hot water running down. I have noticed that.”*

### What do you do to manage your pain?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I have some medication from the doctors, and that does seem to work here and there. It's a hit and miss. I also will rest as much as I can. Warm bathes seem to ease the pain, especially the burning feeling. It just kind of relaxes.*

*Medication overall depends. A lot of it will make me sick to my stomach, so I don't want to take it that often. Or, it makes me very tired. And the lack of sleep and taking the meds that make me tired really makes it difficult to get through the day. So, I probably don't take those as much as I should. I do take ibuprofen to help with some pain. That tends to help a little bit, here and there.*

*I store my pain medication in the bathroom, and then there is some up in the kitchen cabinets."*

### How has pain affected your sleep?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*"My sleep patterns vary, depending on what the pain level is and what I've done that day. I've tried sleeping in recliner chairs or sleeping upright to see if that would help. I've tried sleeping of course, in the bed, with pillows around me. I can usually fall asleep pretty easily, but then I can never stay asleep and I'm restless, with thoughts racing through my mind.*

*The pain does come back at night. My thoughts will keep me up a lot, too, thinking about the pain. Like, 'What am I going to do? What do I do next? What will the doctor tell me to do?' Those type of things."*

### Do you feel hopeless?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*"There are times I feel hopeless, and there are a lot of times I feel that's where family comes in. I feel like I want to give up, but they keep fighting for me. You just don't know what you want to do next. You'd rather it just be done and over with.*

*When I say, 'done and over with,' you think, 'Will there ever be an end to this?' You know, eight months past surgery, a year past being diagnosed, you feel like you would have some light at the end of the tunnel. Not seeing that now makes it difficult to figure out what to do next and where to go next."*

## What other health issues do you have?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*"Some of the other conditions, probably with anxiety, just thinking about things. My mind is constantly going because when you have the pain, you're thinking about the pain, and that gets you thinking about other things. It's just the mind's constantly thinking and moving."*

## How has your pain changed over time?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*"The pain that I had right after surgery, I felt like was more of an expected 'normal' pain. You know, you feel like you're going to be sore and have some discomfort. But I think as time has gone on, the pain has changed in the sense I wasn't expecting to have the burning sensations or the pain down my arms or on my shoulders. I expected more pain to be in the chest area. But I didn't expect it to be this severe or for this prolonged amount of time."*

## How has pain affected your mood?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I have been told there have been some changes in my mood. There has been some changes in my mood in that some of my colleagues have noticed that I’m a little bit more irritable. I tend to snap a little bit more easily than I used to under stress.*

*It’s some feelings of you just don’t feel like yourself, which may bring on some feelings of depression. I don’t know if I would truly say that I’m depressed, but you just feel like where do I go, what do I do next?*

*Some items that help with feeling better about myself include finding ways to relax, whether that’s the hot bath or even just getting away from everything and sitting outside and just try to enjoy and remember what we have in life.”*

## How would you rate your pain?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“Depends on the activity and how the day’s going. Mornings are worse, so that could be anywhere from 8-10 and if it’s a really busy day where I’m constantly moving and going that pain level can stay at that 8 range, but if I take it easy, and watch what I’m doing, I can get down to a 4 or a 3.*

*Rating my pain right now, I am probably a 3. I’m not too bad, but throughout the day, it depends on my activities. It can go up to a 10, to a point where I feel like I can catch myself leaning forward. Because when I lean up, it feels like it’s stretching and causes some pain.”*

## Do you have a support system?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I do try to meet up with some friends every once in a while. I try to find some support groups. Some ladies may be going through the same thing we can discuss and maybe not feel so alone and kind of learn different avenues to help each other out.”*

## Describe your level of exercise.

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I’ve started lately to get back into exercising, so I’m trying to go at least two times in the morning. That seems to be helping, but it can be difficult to start. I have to watch what I’m doing because there’s still some pain when I’m moving certain ways. So, I’m trying to get back into more activities with the family, too.*

*So, I’m just taking baby steps. I’m starting to walk a little bit more. So, instead of doing activities with my children, like playing basketball or playing catch or taking the dog for a walk, I’m just walking myself while they’re doing the activities.*

*For example, if we’re going to take the dog for a walk, they’re going to have to walk the dog and I’m just walking with them because I cannot hold the dog because the pain that comes from holding the leash and the dog pulling is too much. So, I’m just taking small steps.”*

## What are your expectations related to your pain?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I am surprised what I’m feeling with the pain and the recovery. Meeting with the doctors at the beginning, when I was diagnosed with cancer, of course I was shocked and surprised then. The outcomes and options were kind of explained then, but they didn’t explain the pain and how long the recovery process would be.”*

## Do you drink alcohol or take illicit substances?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“Since our last visit, my alcohol use hasn’t really changed. It’s still social. Every once and a while, I may have a glass of wine at night to see if it would help me relax and maybe just kind of handle the pain a little bit better if I had a rough day that day.”*

## How has pain affected your intimacy?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“That probably isn’t there as much as it used to be. Just not feeling myself, not feeling worth it anymore. You kind of get depressed with how you look and feel after dealing with the pain.”*

## Describe your post-operative rehabilitation/physical therapy.

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I have tried physical therapy. In the beginning the doctor suggested to do that right away. However, the sickness and the pain I was feeling meant I wasn’t able to go back and complete physical therapy.”*

## How has pain affected your daily activities?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“Because of the surgery, there are a lot of challenges at home that I wasn’t expecting to come across. For example, not being able to vacuum. Not being able to clean the bathroom because a lot of the arm movements of just constantly going in circles or getting over to scrub certain things. I’m having to ask for help or get stools so I can reach items that are on a higher shelf, because that stretching up to reach something is also very painful.”*

## How has your pain affected your relationships?

Pam sits in an office chair in an exam room. The shot shows a counter with cabinets underneath it behind her, with a box of latex exam gloves behind her. The viewer can see her head and shoulders.

*“I think at the beginning, it didn’t affect it. But now it’s starting to where they’re not understanding the pain I have and why I’m having it for so long after the surgery. Because we’re about eight months past the surgery and still having a lot of pain and not being able to do the normal, everyday things that I’m expected to do as a mother and a wife.*

*This is affecting my family in a way that I cannot be as active with them and participate just as a whole person, whether it’s having conversations*

*with them or doing activities. Because if I've had a bad day and have a lot of pain, I don't want to sit and do things with them, which makes it very hard as a family to stay together. I think they're getting a little frustrated because they don't know what to do and how to help me emotionally with handling the pain.*

*My relationship with my husband, before being diagnosed with breast cancer was very strong, very close best friends. But now, going through the process, it seems like we're kind of furthering ourselves. I don't think it's done on purpose, I think it's just having a lot of the pain and going through the stress and the anxiety and lack of sleep, and just dealing with all of that and still trying to keep my job up within the household and my job outside of the house, it's hard for him to understand. And so, he becomes easily frustrated and angry. And not knowing what to do and not being able to help me take away the pain causes some stress."*

## Support Group Advice

Pam sits with three other women from a support group for women with chronic pain following surgery for breast cancer at a table at a coffee shop. As they sip their coffee, they chat about their experiences post-surgery.

A woman with a short blonde bob sits next to Pam. *“Hi Pam,”* she says. *“We’re glad you could join us.”*

*“I’m glad I was able to come,”* Pam replies. *“I saw the flyer hanging up at the center and so I thought I’d give it a shot.”*

A red-headed woman across from Pam says, *“So, you were mentioning that you were feeling a little sad and depressed, and maybe a little unhappy with the way things were turning out for you. With this, what I’ll call ‘new’ body, how are you feeling with the surgery aspect and how things have changed for you?”*

Pam gestures to her chest and shoulders and says, *“Lately I’m just having a lot of pain and chest, and just can’t do the things I would normally do. It’s very frustrating.”*

A screen title along the bottom of the shot reads, *“Post Mastectomy Pain Syndrome (PMPS) is pain after any type of breast surgery.”*

The blonde woman next to Pam asks, *“When were you diagnosed?”*

*“A year ago,”* Pam responds. The blonde woman nods thoughtfully.

A screen title along the bottom of the shot reads, *“PMPS may be of moderate intensity, have neuropathic qualities, and persist for greater than 6 months following surgery.”*

A second blonde woman with slightly longer hair, sitting across from Pam says, *“You’re really young. You’re new into this, so you’ll get used to some of this. It’ll subside. It’ll get better.”*

Pam asks, *“What do you mean I’ll get used to it? Because right now I don’t feel I’m going to get used to it.”*

The woman sitting beside Pam answers the question, *“Like symptoms will lessen.”*

*“Yeah?”* Pam confirms. *“It will?”* The other woman nods her agreement.

A screen title along the bottom of the shot reads, *“Incidence and intensity of breast pain may diminish even after several years of being present.”*

Pam turns to address the woman who told her she’d get used to it. *“So, how long then?”*

The woman replies, *“It’s been three years for me.”*

A screen title across the bottom of the shot reads, *“24-69% of women still report pain in the breasts, axilla, or shoulder up to two years following their mastectomy based on longitudinal data.”*

*“And what were the symptoms that you had?”* Pam asks.

The woman responds, *“I’m just having some issues here and there. They come and go. I wasn’t sure what I wanted to do. I had stage 3 when I was diagnosed.”*

A screen title across the bottom of the shot reads, *“The development of PMPS does not appear to be associated with any type or staging of breast cancer.”*

She continues, *“So I went through and tried to weigh my options and decide if I wanted to have a double mastectomy, or reconstructive surgery or not. I discussed it with my husband and ended up deciding that having a bilateral mastectomy was best. I just have some pain; it’s kind of where my scars were. My arm is numb. It gets heavy.”*

A screen title across the bottom of the shot reads, *“Symptoms include burning, shooting, pressure, numbness, and heaviness.”*

She adds, *“You know, when they took the lymph nodes out of my left arm and I knew that I was gonna have some aftereffects and repercussions of things. They told me that there’d be some pain and discomfort, but I asked myself, ‘Is this normal for me? Is it something that everybody’s feeling?’ I had to kind of figure that out. They gave me the compression band to wear and I still have numbness and it’s heavy in my arm.”*

A screen title across the bottom of the shot reads, *“Compression therapy, usually combined with manual lymphatic drainage, is the initial approach to lymphedema management.”*

*“I don’t know if everyone has to wear the compression band or that’s just me, but I have to wear it more often than I think I should. It’s hard to take on and off. There are days I want to go out and not have to put it on, but it just becomes second nature to deal with it. I don’t want it to take over my thinking. So, I have to just put it on and go outside and do what I need to do. Go to work, whatever.”*

She asks the redheaded woman, *“Did you have the numbness?”*

*“I don’t have the numbness, but it’s hard to do overhead activities.”*

A screen title across the bottom of the shot reads, *“After 5 years, as many as 36% of women report arm or shoulder pain during physical activity.”*

She continues, *“I had the bilateral mastectomy. You adapt. I don’t think it’s getting used to it. You adapt to what you have. You make adjustments to where you change your lifestyle a little bit. It just becomes who you are.”*

Pam asks the blonde woman across from her, *“So, how long since you had your surgery?”*

*“It’s been over two and half years.”*

Pam points to the redheaded woman across from her to ask her the same question.

She responds, *“It’s been about three years.”*

Pam says, *“But even after that long period, you’re still having the pain and still the issues?”*

A screen title across the bottom of the shot reads, *“Women still reported arm pain during activity (36%), at rest (30%), arm heaviness during activity (21%), or arm heaviness at rest (20%) at 5 years post op.”*

The blonde woman across from Pam answers, *“You’ve got to learn to laugh and find time to discuss so you don’t feel like you’re alone. Support group kind of helps a little bit.”*

A screen title across the bottom of the shot reads, *“ACS/ASCO breast cancer survivorship guidelines recommend primary care clinicians proactively assess for pain and neuropathy following breast surgery.”*

The redheaded woman adds, *“I don’t know how your doctor handles it, but I’ve got some medicine and it helps. When it gets really bad, ice works for me. An ice pack will help with some of the pain.”* She turns to the blonde woman beside her and asks, *“Have you tried ice packs?”*

*“They told me warm compresses,”* the blonde woman replies.

A screen title across the bottom of the shot reads, *“Heating pads or warm compresses can represent a potential hazard for burns if numbness or neuropathy is present in the affected area.”*

*“And some Motrin,”* the blonde woman continues. *“I’ve been using the Motrin, but I don’t like taking a lot of stuff. Especially with everything going on and the rest of the family. Too much, and it can tend to take over.”*

*The Motrin helps a little bit, but I feel like I’m constantly taking Motrin and doing the warm compresses, but I don’t know that I notice a whole lot of difference.”*

A screen title across the bottom of the shot reads, *“PMPS is generally considered a neuropathic pain condition in which NSAIDS may be less effective. Additionally, NSAIDs may worsen swelling.”*

*“It helps during the day if I can lay down and relax. I can’t do as much overhead lifting. Even my therapist said to limit some of the things I could do.”*

The blonde woman sitting next to Pam says, *“Now, mine was a little different from theirs. I had stage IIB, triple negative. I didn’t have any of the hormone receptors that they typically look for. So, they had to treat my cancer differently. I just had a right side lumpectomy.”*

A screen title across the bottom of the shot reads, *“Lumpectomy has lower risk of PMPS unless axillary lymph nodes removed.”*

She continues, *“To this day, I still have some achiness, stabbing pain, itching. I ended up going through radiation and chemo. The radiation caused some burning, but like you were saying, it gets better. That burning did get better. The chemo caused my biggest problem in the neuropathy of my hands and feet.”* Motioning to the other blonde woman across from her, she says, *“Like she says, when it was cold, my hands and feet, it’s worse. I just have to lay down, like she said, and rest because it’s like electric shock in my hands and feet.”*

A screen title at the bottom of the shot reads, *“Positive data for the treatment of PMPS exists for gabapentin, venlafaxine, and amitriptyline.”*

The blonde woman adds, *“Now, none of the medicine that I’ve taken from my doctor has helped. A friend suggested some vitamin B and I’ve been taking that, but right now I haven’t noticed much change. So, I guess everybody’s a little bit different.”*

The redheaded woman says, *“I think there’s good days and bad days, just with everything else, too.”* The rest of the women nod in agreement.

Pam says, *“I guess it’s just hard to take it all in. I mean, you get diagnosed with it, and then the whirlwind starts. Then you make your decision on which path you’re going to take and then you have the surgery and then almost feel like, ‘okay, it’s done and over with,’ that the way you guys are talking, it’s almost like it’s going to be a lifetime of something happening,*

*whether it's a lot of pain, or it's just that feeling of that something's just not right or just the soreness."*

A screen title at the bottom of the shot reads, *"Reconstructive surgery involving breast implants is associated with a higher prevalence of PMPS compared to reconstruction without breast implants."*

*"Because I have the burning sensation I notice about two or three months after I started chemo."*

A screen title at the bottom of the shot reads, *"Burning, numbness, and dysesthesia may occur peripherally following administration of numerous chemotherapeutic agents as well as locally from radiation treatment."*

Pam continues, *"It feels like hot water running through you and you get the numbness, and that was kind of scary because I wasn't expecting that. The doctors had never mentioned anything about that."*

The blonde woman across from Pam asks, *"Had they discussed physical therapy?"*

A screen title at the bottom of the shot reads, *"Physical therapy may be beneficial at multiple points during recovery to prevent or address upper extremity functional limitations."*

Pam replies, *"I did physical therapy at the very beginning, but then with being so sick and just all the pain and the issues going on, I didn't go back. I'm trying to do things on my own. Maybe start walking, little things like that, but otherwise, no, I never went back."*

The blonde woman across from Pam says, *"Don't wear yourself out. Especially in the beginning after having all that."*

The blonde woman next to Pam says, *"Now, did any of you guys notice any change with your balance?"*

A screen title across the bottom of the shot reads, *"Pain in the torso, upper arms, and shoulders can affect gait and balance, resulting in problems with ambulation."*

The blonde woman next to Pam continues, *“Because I’ve been noticing that my balance seems to be off, and I’ve stumbled here a couple of times.”*

The blonde woman across from Pam replies, *“Not so much with that, but picking things up with my arm and it feels heavy.”*

A screen title across the bottom of the shot reads, *“Arm pain, heaviness, and weakness significantly impact functional and emotional well-being as well as reported disability.”*

*“I can’t always tell if something is going on with my arm. I literally sometimes have to touch my arm to make sure I know where my arm is, and my side tends to be more tender. It’s not numb,” she says, making a face as if to say, “well, I have issues with it, but not with numbness.”*

A screen title at the bottom of the shot reads, *“Women with arm or shoulder problems after breast surgery have impaired social functioning, emotional wellness, and mental health on the SF-36.”*

Pam says, *“Now, sometimes I find myself feeling anxious, you know, can’t sleep at night. And then I start to feel kind of like, in a sad state. Did any of you go through that?”*

The redheaded woman replies, *“For me, mine was they had just found some cancer cells, but I did some genotyping and I’m a carrier with the BRCA gene. And so mine was the choice to have the bilateral mastectomy, and then I went right ahead and did the reconstruction while I was there. Just to hopefully lessen the chance of any further issues. But there’s still pain. There’s still working on being comfortable in my skin, being comfortable in the activities that I do, learning to adapt to a new normal.”*

Pam asks, *“Now, how did you guys handle issues with your family? Like with your children or your spouses? Because sometimes when you’re in a lot of pain or you’re just overly exhausted from everything going on, it’s just hard to really be there for everybody else when you’re trying to take care of yourself.”*

The blonde woman next to Pam nods and says, *“Right. I know for me personally, and I’m a little different because I only had the lumpectomy,*

*but when the neuropathy hits, my kids and husband know, and they're very supportive. They help me out and they help get things and do things I would generally do."*

## Test Your Knowledge: PMPS Statements

Identify the true statements about PMPS from the options below.

1. Pain may improve, even after years following surgery
2. Approximately 5-10% of women will experience pain at 2 years post-op
3. Axillary lymph node dissection increases risk of PMPS
4. PMPS development is dependent on type and staging of cancer
5. The older a patient, the more likely she is to develop PMPS
6. PMPS is less likely following lumpectomy versus mastectomy
7. Venlafaxine is an appropriate treatment for PMPS
8. Compression therapy should be reserved as a last line therapy

## Recommend Care for Pam

First, refer to Pam's background for reference:

HPI: 41-year-old Caucasian female with chief complaint of pain in chest, arm, and shoulder.

PSHx: Bilateral skin sparing mastectomy with axillary node dissection and reconstruction 3 months ago

PMHx: GAD, Depression, Breast Ca (Stage 3C invasive ductal carcinoma)

Meds:

Tamoxifen 20mg PO daily

Goserelin 3.6mg subQ every 28 days

Lorazepam 2mg PO QHS

Oxycodone ER 20mg 1 tab Q12 hours

Oxycodone / acetaminophen 5-325mg 1 tab PO Q 4-6 hours PRN (~ 2 doses daily)

Ibuprofen 400mg PRN (~ 2 to 3 doses daily)

Sennosides / docustate 2 caps QAM

SHx: Denies tobacco or recreational drugs, occasional alcohol intake socially

Pain: stabbing, sharp, aching, and tender over lateral aspect of chest wall, shoulder, and occasionally the arm. It is worse in the morning and with strenuous activity. Burning, tingling, and numbness in hands and feet but improving. Aggravated by light touch, pressure, trigger point (underarm), exposure to cold air, raising arms above 90 degrees. Alleviated by meds, rest, and warm baths. 5/10 now, 6/10 average, 9/10 worst, 5/10 least; 8/10 activity, 6/10 mood, 5/10 sleep, 3/10 work, 10/10 relations, 8/10 enjoyment

ROS: fatigued, some depression, mild constipation, musculoskeletal pain over anterior chest.

Vitals: BP 112/74 mmHg; HR 78 bpm; RR 20 bpm; Temp 98; Ht 65' in; Wt 140 lbs

Physical Exam: hunched posture, decreased bowel sounds, surgical scars healing well, mild swelling in both arms R > L. Decreased ROM bilaterally and guarding present.

Labs: CBC, BMP, HgBA1c, B12, and TSH within normal limits

## Test Your Knowledge: Pam's Current Problems

Which of the following are Pam's current problems?

1. Poorly controlled pain
2. Social isolation
3. Opioid abuse
4. Functional limitations
5. Body image
6. Emotional distress
7. Medication safety
8. Anemia
9. Lymphedema
10. Alcohol abuse

## Test Your Knowledge: Pain Control

With this knowledge in mind, which of the following interventions would you recommend to help Pam's pain?

1. [Initiate gabapentin for adjuvant analgesia](#)
2. [Increase CR oxycodone and increase IR oxycodone dose](#)
3. [Decrease CR oxycodone and decrease IR oxycodone dose](#)
4. [Refer to physical therapy](#)
5. [Provide trial of TENS](#)
6. [Refer for counseling](#)
7. [Increase ibuprofen dose and frequency](#)
8. [Increase lorazepam frequency](#)

## Test Your Knowledge: Functional Limitations

Which of the following do you feel should be added to the treatment plan for Pam?

1. [Passive and active stretching guided by a physical therapist](#)
2. [Assessment of range of motion limitations](#)
3. [Referral to a lymphedema specialist for potential manual lymphatic drainage](#)
4. [Passive mobilization](#)
5. [Occupational therapy referral for ADL assistance](#)

## Test Your Knowledge: Psychosocial Distress

Which of the following techniques would you recommend for Pam?

1. [Address depression and anxiety symptom concerns using Cognitive Behavioral Therapy strategies.](#)
2. [Provide education on anatomy, physiology, and mechanisms of pain.](#)
3. [Recommend support group participation to assist normalizing patient's response to pain and surgery.](#)
4. [Consider couple's therapy to address intimacy issues and reset norms for household functions.](#)
5. [Train Pam in symptom tracking and problem-solving strategies.](#)
6. [Referral to psychiatrist or recommendation for anti-depressant to primary care provider.](#)

## Test Your Knowledge: Drug-Related Problems

Which of the following is a drug-related problem for Pam?

1. [Concurrent use of opioids and benzodiazepines](#)
2. [Alcohol abuse](#)
3. [Use of alcohol with opioids](#)
4. [Lack of an appropriate bowel regimen](#)
5. [Opioid use disorder](#)
6. [Lack of appropriate naloxone co-prescribing](#)
7. [Over-sedation with opioid analgesics](#)
8. [Contraindication to ibuprofen use](#)

## Followup with Pam

### *Non-pharmacologic*

Pam learned from her support group that mild hot and cold compresses used regularly could help with her musculoskeletal symptoms. She additionally received a transcutaneous electrical nerve stimulator (TENS) device, which she believes is providing some relief when she remembers to use it. She is interested in learning more about dietary modifications and is asking today about some dietary supplements she read can be beneficial for neuropathy.

### *Pharmacologic*

Pam was initiated on gabapentin, which she believes provided relief for her neurogenic pain symptoms. She has since had duloxetine added to her regimen and her pain severity has reduced. She is now on oxycodone and acetaminophen IR only and averages one to two doses weekly. She is no longer taking the lorazepam at night.

### *Emotional Well-Being*

In addition to her support group, Pam has been seeing a counselor alone for help with body image, anxiety, depression, and coping strategies. She and her husband complete six sessions of couples' therapy from a specialist.

### *Functional/Rehabilitation*

At her primary care provider's urging, Pam returned to physical therapy and completed a full treatment course. She continues to have some mild functional limitations but has made significant improvement in strength and range of motion. She did not have lymphedema. She is once again playing with her kids.

### *Drug-Related Problems*

Pam was successfully weaned down on her oxycodone doses and reported improvement in daytime fatigue and sedation. Her nausea improved as well. At her pharmacist's request, the lorazepam was discontinued and she required no further sleep aids. While she eventually received a naloxone co-prescription, her new opioid dose is well below the cut-off for consideration. She still has not purchased a lock-box for her controlled medications.

## Answer Key

### PMPS Incidence

The incidence of PMPS varies depending on the type of breast cancer treatment.

What treatment do you feel is associated with the **lowest incidence** of PMPS?

1. Mastectomy, chemotherapy, and radiation (*incorrect*)
2. Lumpectomy and radiation (*incorrect*)
3. Mastectomy alone (*incorrect*)
4. Mastectomy and chemotherapy (*correct*)

What treatment do you feel is associated with the **second lowest incidence** of PMPS?

1. Mastectomy, chemotherapy, and radiation (*incorrect*)
2. Lumpectomy and radiation (*incorrect*)
3. Mastectomy alone (*correct*)
4. Mastectomy and chemotherapy (*incorrect*)

What treatment do you feel is associated with the **second highest incidence** of PMPS?

1. Mastectomy, chemotherapy, and radiation (*incorrect*)
2. Lumpectomy and radiation (*correct*)
3. Mastectomy alone (*incorrect*)
4. Mastectomy and chemotherapy (*incorrect*)

What treatment do you feel is associated with the **highest incidence** of PMPS?

1. Mastectomy, chemotherapy, and radiation (*correct*)
2. Lumpectomy and radiation (*incorrect*)
3. Mastectomy alone (*incorrect*)
4. Mastectomy and chemotherapy (*incorrect*)

### PMPS Pain Location

The location of pain may vary dramatically in PMPS.

What location do you feel has the **lowest incidence** for PMPS?

1. Scar (*incorrect*)
2. Arm or axilla (*incorrect*)
3. Shoulder (*correct*)
4. Chest wall (*incorrect*)

What location do you feel has the **second lowest incidence** for PMPS?

1. Scar (*incorrect*)
2. Arm or axilla (*incorrect*)
3. Shoulder (*incorrect*)
4. Chest wall (*correct*)

What location do you feel has the **second highest incidence** for PMPS?

1. Scar (*correct*)
2. Arm or axilla (*incorrect*)
3. Shoulder (*incorrect*)
4. Chest wall (*incorrect*)

What location do you feel has the **highest incidence** for PMPS?

1. Scar (*incorrect*)
2. Arm or axilla (*correct*)
3. Shoulder (*incorrect*)
4. Chest wall (*incorrect*)

## Morphine Equivalency

Which of the following best represents Pam's current morphine equivalent daily dose?

1. 25 mg (*incorrect*)
2. 50 mg (*incorrect*)
3. 75 mg (*correct*)
4. 100 mg (*incorrect*)

## PMPS Statements

Identify the true statements about PMPS from the options below.

1. Pain may improve, even after years following surgery (*Correct – the incidence and even the intensity of breast pain following mastectomy or lumpectomy may continue to diminish, even after years of being present*)
2. Approximately 5-10% of women will experience pain at 2 years post-op (*Incorrect: in fact, anywhere from 24-69% of women may still report pain in the breasts, axilla, or shoulder 2 years following their surgery*)
3. Axillary lymph node dissection increases risk of PMPS (*Correct: Axillary lymph node dissection is a positive risk factor for developing PMPS, as well as upper extremity lymphedema*)
4. PMPS development is dependent on type and staging of cancer (*Incorrect: in fact, the risk of developing PMPS does not appear to be correlated with neither type of breast cancer nor staging at diagnosis*)
5. The older a patient, the more likely she is to develop PMPS (*Incorrect: actually, the younger a patient is at time of mastectomy, the more likely she is to develop PMPS.*)
6. PMPS is less likely following lumpectomy versus mastectomy (*Correct: the risk of developing PMPS is lower following a lumpectomy versus a mastectomy*)

7. Venlafaxine is an appropriate treatment for PMPS (Correct: Venlafaxine, duloxetine, amitriptyline, and gabapentin all represent reasonable treatment options for PMPS pain.)
8. Compression therapy should be reserved as a last line therapy (*Incorrect: compression therapy (usually involving garments) and manual lymphatic drainage both represent first line treatment options for lymphedema.*)

## Pam's Current Problems

Which of the following are Pam's current problems?

1. Poorly controlled pain (*correct*)
2. Social isolation (*incorrect*)
3. Opioid abuse (*incorrect*)
4. Functional limitations (*correct*)
5. Body image (*correct*)
6. Emotional distress (*correct*)
7. Medication safety (*correct*)
8. Anemia (*incorrect*)
9. Lymphedema (*incorrect*)
10. Alcohol abuse (*incorrect*)

## Pain Control

With this knowledge in mind, which of the following interventions would you recommend to help Pam's pain?

1. Initiate gabapentin for adjuvant analgesia (*correct*)
2. Increase CR oxycodone and increase IR oxycodone dose (*incorrect*)
3. Decrease CR oxycodone and decrease IR oxycodone dose (*depends*)
4. Refer to physical therapy (*correct*)
5. Provide trial of TENS (*incorrect*)
6. Refer for counseling (*correct*)
7. Increase ibuprofen dose and frequency (*incorrect*)
8. Increase lorazepam frequency (*incorrect*)

*Note: While there are no absolute right or wrong answers, we agree that Pam would benefit from initiation of an adjuvant analgesic, such as gabapentin. She would also likely benefit counseling for coping strategies, pacing, and acceptance. A physical therapy referral for Pam would be absolutely warranted. Increasing or decreasing the dose of Pam's opioid would be a provider specific decision, however, she would be likely benefit from a trial wean, especially once the gabapentin is at therapeutic doses. We would avoid increasing the benzodiazepine dose for Pam, especially if opioids were continued. Ibuprofen will likely have little benefit for Pam's pain.*

## Functional Limitations

Which of the following do you feel should be added to the treatment plan for Pam?

1. Passive and active stretching guided by a physical therapist (*correct*)
2. Assessment of range of motion limitations (*correct*)
3. Referral to a lymphedema specialist for potential manual lymphatic drainage (*incorrect*)
4. Passive mobilization (*incorrect*)
5. Occupational therapy referral for ADL assistance (*correct*)

## Psychosocial Distress

Which of the following techniques would you recommend for Pam?

1. Address depression and anxiety symptom concerns using Cognitive Behavioral Therapy strategies. (*correct*)
2. Provide education on anatomy, physiology, and mechanisms of pain.
3. Recommend support group participation to assist normalizing patient's response to pain and surgery. (*correct*)
4. Consider couple's therapy to address intimacy issues and reset norms for household functions. (*correct*)
5. Train Pam in symptom tracking and problem-solving strategies.
6. Referral to psychiatrist or recommendation for anti-depressant to primary care provider. (*correct*)

## Drug-Related Problems

Which of the following is a drug-related problem for Pam?

1. Concurrent use of opioids and benzodiazepines (*Correct: this combination increases risk of opioid overdose*)
2. Alcohol abuse (*Incorrect: Pam does not meet criteria for alcohol use disorder*)
3. Use of alcohol with opioids (*Correct: Concurrent use of EtOH and opioids increases risk of respiratory depression and overdose related death*)
4. Lack of an appropriate bowel regimen (*Incorrect: Pam is currently using an over the counter combination of sennosides and docusate (stimulant plus stool softener)*)
5. Opioid use disorder (*Incorrect: Pam does not meet criteria for opioid use disorder*)
6. Lack of appropriate naloxone co-prescribing (*Correct: Based on CDC criteria, Pam is a candidate for naloxone co-prescribing given morphine equivalent greater than or equal to 50 mg.*)
7. Over-sedation with opioid analgesics (*Correct: Pam reports during her patient interview that both nausea and sedation from oxycodone limits use of these analgesics*)
8. Contraindication to ibuprofen use (*Incorrect: While ibuprofen may not provide significant analgesia for Pam, there are no apparent contraindications for its use.*)

## Learning Resources

### Guidelines

[American Cancer Society / American Society of Clinical Oncology Breast Cancer Survivorship Care Guideline](#)

[National Comprehensive Cancer Network Practice Guidelines: Adult Cancer Pain](#)

[Agency for Healthcare Research and Quality: Diagnosis and Treatment of Secondary Lymphedema](#)

[Management of Postoperative Pain: A Clinical Practice Guideline](#)

[Cochrane Sys. Review: Manual Lymphatic Drainage for Lymphedema Following Breast Cancer Surgery](#)

### Full Text Reviews

[Hayes SC, et al. Upper-body morbidity after breast cancer. Cancer 2012;118\(S8\):2237-2249.](#)

[Brackstone M. A review of the literature and discussion: Establishing a consensus for the definition of post-mastectomy pain syndrome. Can J Surg 2016;59\(5\):294-295.](#)

[Humble SR, et al. A systematic review of therapeutic interventions to reduce acute and chronic post-surgical pain after amputation, thoracotomy, or mastectomy. Eur J Pain 2015;19\(4\):451-465.](#)