

# Shining a Light on Mucositis

A new study conducted by St. Jude Nursing Research uses a painless therapy to help children avoid a common side effect of bone marrow transplantation.

*By Carrie L. Strehlau; Photos by Justin Veneman*

Light is powerful. It cuts through the darkness. It illuminates the soul. It vanquishes the “dark side.” It travels at 186,000 miles per second. For patients undergoing bone marrow transplants at St. Jude Children’s Research Hospital, light also lessens the symptoms of mucositis.

Mucositis is a painful inflammation of the mucous membranes lining the mouth and the digestive (GI) tract. After chemotherapy, sores and ulcers may develop in those areas — causing swallowing problems; mouth, throat and GI pain; breakdown of the stomach lining; and a high infection risk.

Patients use soft-bristle brushing, a special mouth wash and ice chips to combat mucositis. But around-the-clock ice chips are not practical, especially when transplant drugs

may be given continuously and overnight.

“One of the most distressing symptoms associated with transplant is mucositis,” says Michele Pritchard, PhD, of [Nursing Research](#). “Patients can develop small sores under their tongues and suffer from throat pain.”

## Shine on

St. Jude clinicians were determined to take mucositis prevention further.

The solution? Shine a light on it.

Although light therapy, or photobiomodulation therapy, has been used to manage mucositis in adult patients undergoing bone marrow transplant and head or neck radiation, its use in children has been limited.

“We first started talking with dentists familiar with light therapy to determine how we could implement this form of symptom management for our young transplant patients,” says [Belinda Mandrell, PhD](#), of [Nursing Research](#) and the study’s primary investigator.

*Filling a need: Belinda Mandrell, PhD, and her team developed a study designed specifically for bone marrow transplant (BMT) patients.*

## How does it work?

Chemotherapy or radiation therapy can cause inflammation and cell death. Light

therapy helps reverse this process. When absorbed by the cell, the light increases cellular metabolism and decreases inflammation.

St. Jude Nursing Research staff developed a study designed specifically for bone marrow transplant (BMT) patients.

"We developed this as a prevention, not as a treatment," Mandrell says. "We start light therapy on the first day of admission as a preventive measure."

The researchers want to see whether light therapy reduces oral mucositis in children and adolescents. All study participants are getting blood stem cell transplants from matched or unmatched donors. The researchers also want to explore whether the treatment works for those who receive their own cells as part of the transplant process.



*Preventing problems: Susan Ogg, RN, of Nursing Research delivers light therapy to patient Jennings Palmer.*

## **Swift and painless**

The daily low-level light therapy is given both inside and outside the mouth for one minute per site. The child receives treatments until engraftment of the new bone marrow occurs or for 20 days, whichever is earlier.

Patients can watch TV, read or play games during the light

therapy.

“So much of cancer treatment may cause discomfort or pain,” Pritchard says. “This doesn’t cause pain. It’s like a flashlight on their cheek.”

Older patients may hold the light probe themselves, taking an active part in their own therapy.

“It’s reassuring to caregivers that this can be a passive treatment for their children, especially if they’re not feeling well,” Pritchard says.

For those who are school age and older, the light therapy may be given using a probe that resembles a lollipop that can be held in the mouth. Small dental light probes may be used under their tongue or along the gum line.

“We ask the patient their level of pain before and after the treatment. We also document their need for nutritional support, blood and oral cultures,” Pritchard says. “We hope this helps decrease days in the hospital and reduces associated blood infections.”

The protocol has been active for about a year, with no reported toxicity or adverse events.

“Sometimes a child might complain that something hurts before we can see anything going on in their mouth,”

Pritchard says. "When we treat that area, they say it really helps with the pain."

**This light therapy study shows that we will go to any length — and will try even seemingly unusual techniques — if it can make those hardest days easier for our patients.**

**Brandon Triplett, MD**

## **More than prevention**

The team now has enough data to recommend light therapy for patients who receive radiation to the head and neck as well as for other bone marrow transplant patients. Early results have shown the treatment to be successful in preventing serious mucositis.

"I'd like to see light therapy given as a supportive care option not only for mucositis prevention among BMT patients, but as therapeutic treatment for patients who develop mucositis," Mandrell says. "Additional projects include implementation in wound healing."

Although providing the therapy might sound easy, it requires specialized equipment and an experienced team of clinicians.

“Our team sees these patients every day to deliver therapy,” Pritchard says. “We couldn’t do this without our great bedside nurses.”

[Brandon Triplett, MD](#), of [St. Jude Bone Marrow Transplantation and Cellular Therapy](#) says the study illustrates the staff’s dedication to the children of St. Jude.

“Transplantation is one of the most powerful cancer treatments we have. Due to that intensity, it’s also one of the most difficult treatments,” he says.

“To me, this light therapy study shows that we will go to any length — and will try even seemingly unusual techniques — if it can make those hardest days easier for our patients.”

From [Promise, Summer 2021](#)

[Donate Now](#) [Promise Archive](#)

**More articles from this issue**