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Assessing, managing and monitoring clinical lymphedema



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Skilled nursing leaders know that the number of women surviving breast cancer is rising. While this is good news, survivorship care has grown more complex and challenging for clinicians in skilled nursing facilities.

One of the most devastating conditions following breast cancer or other cancer surgery and treatment is [lymphedema](#), the potentially permanent swelling that can occur in the arms or legs, and which is caused by the removal of or damage to lymph nodes as a part of cancer treatment.

Despite the impact on health and quality of life for the 3 to 5 million people in the U.S. who have lymphedema, with breast cancer-related lymphedema (BCRL) being the most common form, there is limited public and professional outcry about halting this debilitating condition. Until now.

Fortunately, with the introduction of new technologies, such as bioimpedance spectroscopy (BIS) devices, earlier detection and proactive management and prevention of BCRL is now possible. Detecting and treating BCRL at the earliest possible stage is the best way to manage the condition and prevent it from leading to chronic pain, recurrent infection, reduced mobility, and impaired function.

This is good news for both clinicians and patients: BCRL can affect as many as 65 percent of the 250,000 annual breast cancer patients in this country depending on the type of treatment.

Impact of BIS Technology

Lymphedema is caused by blockage in the lymphatic system, which is part of the immune system. The blockage prevents lymph fluid from draining well, and the fluid buildup leads to swelling. While there is presently no cure for lymphedema, the fluid buildup can be managed and often reversed with early diagnosis and diligent care of the affected limb(s). If not detected early and managed, the fluid will turn fibrotic over time and is no longer reversible. It is a progressive disease leading to life-long management and quality of life issues.

The Lymphedema Index (L-Dex®) is breakthrough technology based on the use of bioimpedance spectroscopy (BIS), the most accurate and most sensitive type of bioimpedance. BIS provides a highly accurate measure of extracellular fluid (ECF) in a rapid and non-invasive manner. It can determine fluid shifts, as small as ~36mL in the human body, which are medically meaningful. For lymphedema, this means L-Dex can detect excess accumulation of ECF long before any visible or measurable swelling occurs.

L-Dex technology has been the subject of numerous published studies and is now the recommended technology for the early assessment of lymphedema by organizations such as the National Lymphedema Network (NLN), National Accreditation Program for Breast Centers (NAPBC), the American Physical Therapy Association (APTA), and many clinics and hospitals across the United States.

Halting the Devastating Impact of BCRL

Historically, clinicians have been challenged to detect and understand early lymphatic changes following breast cancer treatments. Today, clinicians in multiple healthcare settings and at cancer centers located in hospital systems nationwide are utilizing SOZO®, which uses patented BIS technology to measure impedance at 256 data points, providing a painless, non-invasive and reliable alternative that should be viewed as a standard approach for the detection of lymphedema. In fact, studies indicate that BIS devices can detect subclinical lymphedema in breast cancer survivors up to 10 months earlier than traditional methods.

With the availability of this intuitive FDA-cleared digital health and wellness platform, professionals have access to technology that provides a precise snapshot of body composition, fluid status and hydration. Users are empowered with digital tools that help promote positive behavioral changes.

There are multiple advantages to this approach over other measures, which accounts for its growing adoption rate throughout the U.S. healthcare system:

- Providers now recognize that the commonly used measures of weight, blood pressure, and BMI deliver limited information that is often misleading.
- Invasive tissue measurements, such as dual-energy X-ray absorptiometry (DXA) or CT scanning, are expensive and not considered suitable for routine use due to radiation exposure.
- Precise fluid (intracellular and extracellular) measurements, such as deuterium oxide dilution, are also costly and extremely time consuming.
- Circumference measurement (tape measure), water displacement and perometer methods do not always detect the onset of clinical lymphedema early enough to halt or reverse the condition.

BIS Aligns with Value-Based Healthcare

In today's increasingly value-based healthcare environment, BIS aligns with the goals of supporting providers in their quest to proactively help patients improve their health, reduce the effects and incidence of chronic disease, and live healthier lives in an evidence-based way. The value of BIS is derived from its capabilities to measure health outcomes against the resources required to deliver the outcomes.

Calculating Value

In value-based healthcare, patients spend less money to achieve better health.

This is precisely where BIS demonstrates its impact. A new study from the [Johns Hopkins University Bloomberg School of Public Health](#) shows that the financial fallout from breast cancer can last years after diagnosis, particularly for those with lymphedema: A common side effect from treatment, causing cumulative and cascading economic consequences for survivors, their families, and society.

Excluding productivity costs, those with lymphedema were estimated to have an average of \$2,306 in out-of-pocket costs per year, compared to \$1,090 for those without lymphedema — a difference of 112 percent, the study found. When factoring in productivity costs, those with lymphedema spent an average of \$3,325 in out-of-pocket costs, compared to \$2,792 for those without lymphedema.

The trend to value-based reimbursement transcends multiple stakeholders. Clinicians at SNFs will find it interesting that a recent analysis of commercial payers found that within two years of treatment a [diagnosis of lymphedema adds](#)

\$14,600 to the average cost of treatment for a patient with breast cancer. While health plan cost savings are important, payers may see even greater value in SOZO to enhance member quality of life and improve patient satisfaction – factors which influence member recruitment and retention programs.

SNF leaders will also find noteworthy that a number of breast cancer treatment programs currently using BIS for preclinical detection report substantially fewer cases of clinical lymphedema, particularly among patients at high risk after axillary dissection, radiation or taxane-based chemotherapy. These centers report progression to clinical lymphedema in fewer than 10 percent of these high-risk patients. This substantial reduction can be credited to early detection and tailored intervention.

BIS for Heart Failure

Elevated risk of heart failure during and after treatment is a major concern for breast cancer survivors. The sometimes harmful effects of surgery, drugs, and radiation leave breast cancer patients and survivors more susceptible to cardiac events and re-hospitalization.

To address these issues, BIS presents capabilities not provided by conventional invasive cardiac measurements, allowing oncologists and physicians to non-invasively monitor patients and make treatment decisions that promote optimal cardiac performance.

BIS technologies can alert clinicians to the possibility of fluid overload/hypervolemia before a patient becomes symptomatic or begins to decompensate, reducing hospital re-admissions and improving quality of life — all within the current workflow and without the need for an expensive implantable device. This is important given that heart failure is the most common discharge diagnosis among patients over 65 years and the most common cause of readmission within 60 days.

With continued research on BIS devices, applications and opportunities for improved outcomes and better value will be on the rise. These initiatives will help skilled nursing clinicians and other healthcare decision-makers to apply optimal care and utilize technology to improve the health and quality of life for all cancer survivors.

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