SOZO Pro

L-Dex® Assessment

Instructions for Use

ImpediMed Limited
ABN 65 089 705 144
Suite 31C
12-18 Tryon Rd.
Lindfield NSW 2070
Australia

Distributed in the United States by:
ImpediMed, Inc.
5900 Pasteur Court, Suite 125
Carlsbad, CA 92008
(877) 247-0111 option 4
tsu@impedimed.com

Phone: + 61 7 3860 3700
Fax: + 61 7 3260 1225
Email: enquiries@impedimed.com
Web site: http://www.impedimed.com

For assistance with product set up please review the help videos at: https://www.impedimed.com.

For other assistance, or to report product issues, please contact ImpediMed U.S. by email at tsu@impedimed.com or by phone at: + 877 247 0111 option 4.

EC	REP

UKRP

MDSS GmbH
Schiffgraben 41
30175 Hannover
Germany

MDSS-UK RP Ltd.
Parkway House, Palatine Rd, Northenden, Wythenshawe
Manchester M22 4DB
United Kingdom

For EU Customers: All products at the end of their life may be returned to ImpediMed for recycling.

For patent(s) and/or patent application(s) see: https://www.impedimed.com/patents/

Patient weight is a critical input for bioimpedance measurement. Clinicians can either manually enter a weight for the patient that was previously measured on a patient scale, or the clinician can directly measure the patient weight with the SOZO Pro system having the patient remove their socks, shoes, and any metal, including jewelry.

1 Safety Instructions

These symbols are provided to guide you in the use of this product safely and correctly, and to prevent risk and injury to you and others. For more safety instructions and other symbols see “SOZO Pro Instructions for Use” (LBL-554).

1.1 Signs and Symbols

Symbol	Definition
	**WARNING!** Indicates matters in which bodily harm or material damage or incorrect measurements may arise as a result of incorrect handling.
	Follow instructions for use.
	Note

2 L-Dex® for Lymphedema

2.1 Indications for Use

The SOZO Pro body fluid analyzer, or SOZO Pro device, has the following uses:

For adult human patients at risk of lymphedema:

A bioimpedance spectroscopy device for use on adult human patients, utilizing impedance ratios that are displayed as an L-Dex ratio that supports the measurement of extracellular volume differences between the limbs, and is presented to the clinician on an L-Dex scale as an aid to their clinical assessment of lymphedema.

The use of the device to obtain an L-Dex score is only indicated for patients who will have or who have had lymph nodes, from the axillary and/or pelvic regions, removed, damaged or irradiated.

2.2 Instructions for Use

Ensure that you have read and understand the instructions for use in all sections of this Instructions for Use (IFU) for setup, installation and use of the SOZOapp, and also ensure that you have read and understand the instructions for use for setup, installation and use of MySOZO and the SOZOapp in all sections of the main IFU, LBL-554, "SOZO Pro Instructions for Use." All warnings, contraindications and precautions apply. In addition, consider the following when using SOZO Pro to take L-Dex measurements on a patient:

For a patient who cannot effectively separate their inner thighs, it may be necessary to place insulating material, such as dry clothes, between the patient's legs. Ensure also that the patient's upper arms and elbows are not in contact with their torso.

Prior to taking a measurement, the patient's profile must be updated to indicate:

- Under "What is at risk of Lymphedema?", select the option that applies: Right Arm, Left Arm, Right Leg, Left Leg, Both Legs.
- Under "What is the dominant limb?", select Right or Left.
- Under "Include Patient in Surveillance Program?", select Yes or No.

Ensure that you update the patient profile correctly to fit each patient's needs, taking into consideration the relevant facts and circumstances related to measurement, as identified in the main IFU, "SOZO Pro Instructions for Use," since this will affect the validity of measurements. Incorrect measurements may impact the accuracy of the L-Dex calculations and may affect the L-Dex assessment based upon L-Dex calculations. For more information about making the correct selections, see instructions for use of the SOZOapp and MySOZO in the main IFU, "SOZO Pro Instructions for Use."

3 The Lymphedema Index (L-Dex®)

The SOZO Pro displays L-Dex assessment results based upon patient measurements taken with the SOZO Pro Device. The L-Dex assessment produces an L-Dex score, which is based on the ratio of the

impedance of the unaffected limb(s) to impedance of the at-risk limb(s). Research has established a normal range of L-Dex scores in healthy patients. Normal L-Dex score ranges are presented in the L-Dex assessment results to assist with patient evaluation.

For patients at risk of unilateral lymphedema in the arm or leg, one L-Dex score will be presented for the at-risk limb. For patients at risk of bilateral leg lymphedema, two L-Dex scores will be presented, one for each at-risk leg.

The underlying calculations for unilateral assessments using the SOZO Pro have not changed from any previous L-Dex devices. The impedance of the extracellular fluid space (R0) of the unaffected limb is compared with the contralateral affected limb. Clinical data has shown this to have “excellent” accuracy when used as a clinical aid to assess unilateral fluid accumulation in the limb following cancer treatment.

When transitioning from L-Dex devices used in a supine position to use of the SOZO system in a sitting or standing position, there may be a one-time shift in L-Dex scores. The shift has been shown to not be significant.

For assessment of patients at risk of bilateral lymphedema, where fluid accumulation occurs in both legs, simultaneously, the comparison of contralateral legs is not an option. SOZO Pro uses the R0 impedance of the unaffected ipsilateral arm, instead of the unaffected contralateral leg, for bilateral assessments of fluid increases.

Note: If a unilateral patient is subsequently considered to be at risk for bilateral leg lymphedema and their profile has been updated, the L-Dex scores for the previously measured leg will be recalculated using this bilateral approach. This may result in a shift in previous L-Dex scores.

For more direction on viewing L-Dex assessment results in the SOZOapp and MySOZO, consult the main IFU, “SOZO Pro Instructions for Use.”

3.1 L-Dex Scores

The L-Dex scale is a tool to assist in the clinical assessment of lymphedema by a medical provider. The SOZO Pro displays the current L-Dex score using the L-Dex scale. The L-Dex scale shows the patient's L-Dex score as either inside or outside of the normal range of L-Dex score for a healthy person.

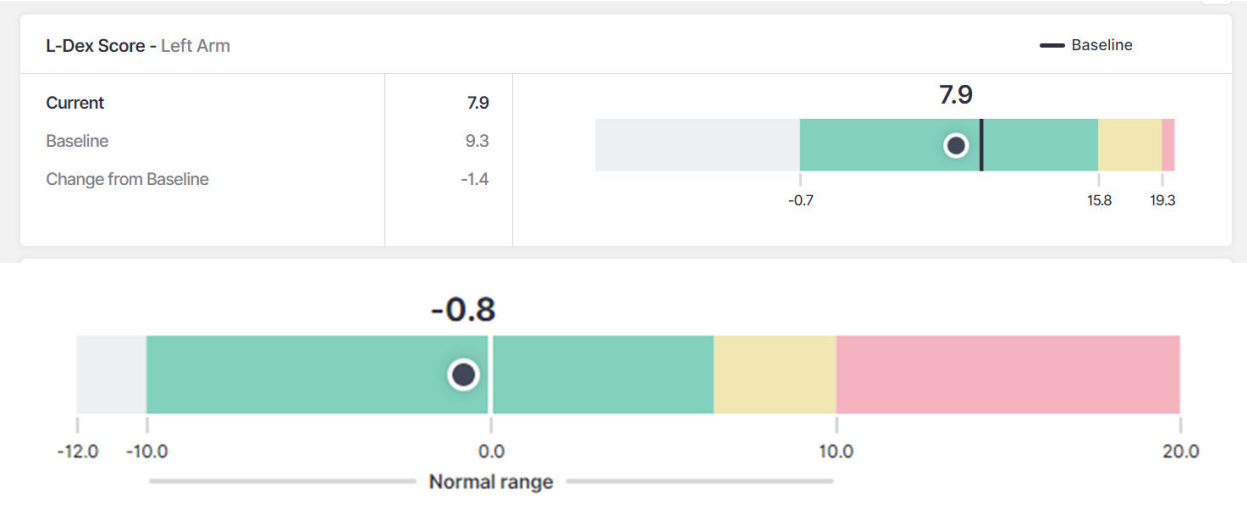
The L-Dex scale normal range (plus or minus 3 standard deviations) measured for a healthy person without lymphedema ranges between +10 and -10 L-Dex units. If a baseline is not set, the normal range will centre around an L-Dex score of 0 which is the mean of the matched healthy population.

L-Dex Scores ≤ -10

L-Dex scores equal to or less than -10 may be caused by procedural errors. A warning will be displayed stating that the measurement is out of range. Follow the instructions for use to ascertain the accuracy of the measurements in question.

L-Dex Scores >10

L-Dex scores greater than 10 may indicate the early signs of lymphedema



L-Dex Categories without a Baseline

Grey (Below Normal L-Dex)	L-Dex scores below 3 standard deviations less than the population mean (below -10).
Green (Normal L-Dex)	L-Dex scores between 3 standard deviations less than the population mean and 2 standard deviations greater than the population mean (-10 to 6.5).
Yellow (Normal L-Dex)	L-Dex scores between 2 and 3 standard deviations greater than the population mean (6.5 to 10).
Red (Above Normal L-Dex)	L-Dex scores above 3 standard deviations greater than the population mean (above 10).

Because each person has a different starting L-Dex score, the L-Dex scale normal range can be tailored to an individual patient by reviewing the change in L-Dex score from a Lymphedema Assessment taken prior to treatment. This is known as a baseline measurement and the change in L-Dex score is used to categorise the measurement. In this case, an increase of 6.5 L-Dex units (two standard deviations) from the baseline may indicate early signs of lymphedema.

When a baseline is set, the normal range will reflect a -10 to +6.5 range around the selected baseline L-Dex score. From this comparison, changes in patient fluid levels may be identified, and evaluated as changes which fall within normal or abnormal ranges.

Change in L-Dex Scores ≥+6.5

L-Dex scores that have changed +6.5 L-Dex units from the baseline may indicate early signs of lymphedema.

L-Dex Categories with a Baseline

Grey (Below Normal Change)	Change in L-Dex scores from the baseline that are greater than 3 standard deviations below the baseline (change greater than -10).
Green (Normal Change)	Change in L-Dex scores from the baseline between 3 standard deviations less than the baseline and 2 standard deviations greater than the baseline (change between -10 and +6.5).
Yellow (Elevated Normal Change)	Change in L-Dex scores from the baseline between 2 and 3 standard deviations greater than the baseline (change between +6.5 and +10).
Red (Above Normal Change)	Change in L-Dex scores from the baseline that are greater than 3 standard deviations above the baseline (change greater than +10).

It is recommended to use a baseline taken prior to cancer treatment whenever possible to customize the L-Dex scale for the individual. If a patient has already begun cancer treatment and there is no way to determine a healthy baseline, the clinician should use clinical judgment in conjunction with other assessments to select the most appropriate baseline measurement. If a patient has already developed lymphedema and SOZO Pro is being used to track their progress, do not set the baseline.

3.2 Recommended Measurement Frequency

ImpediMed recommends the following frequency of measurements for patients at risk of lymphedema[1]:

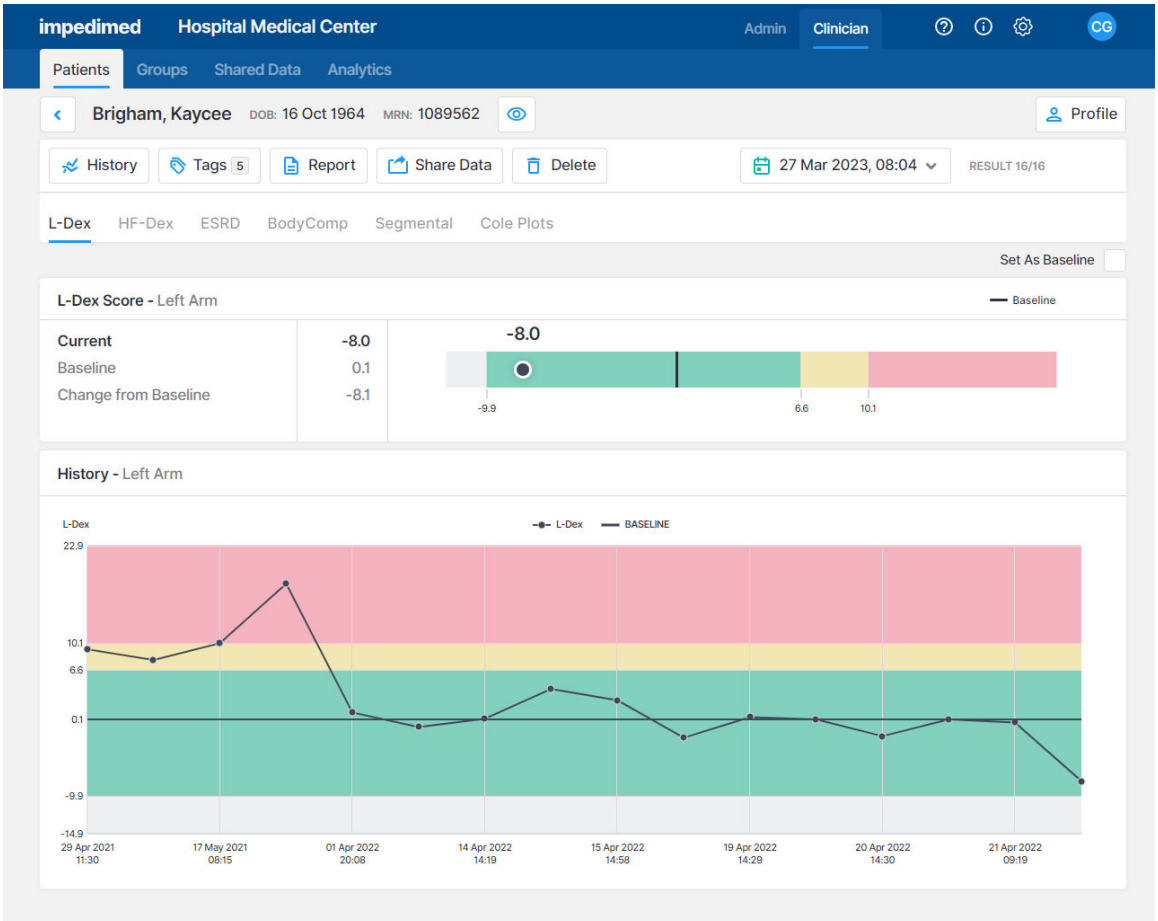
- Pre-operative baseline
- Years 1-3: Every 3 months
- Years 4-5: Every 6 months
- Year 6+: Annually

4 L-Dex® Assessments

4.1 Measurement Results

After a successful measurement, the SOZOapp screen will display the results of an L-Dex measurement. In addition to the immediate results, a history of previous patient measurements is displayed in graph format, to allow comparison between current results and previous results. This shows increases or decreases in the L-Dex score over time. The same patient history information can be accessed from MySOZO through a web browser. For more about accessing MySOZO, see the main IFU, “SOZO Pro Instructions for Use.”

[1] Shah, et al. Bioimpedance Spectroscopy for Breast Cancer Related Lymphedema Assessment: Clinical Practice Guidelines. *Breast Cancer Research and Treatment* 2022.



4.2 Setting the Baseline

Selection of a baseline – a "normal L-Dex score" for an individual patient – is the optimal way to track changes over time. To set a baseline, select the most appropriate measurement by date from the patient's dashboard, and tap the button next to '*set as baseline*':

Please note that if an incorrect measurement is set as baseline, simply select the correct measurement and set as baseline.

For an L-Dex score, the optimal baseline is typically within the first few measurements taken, preferably before surgery or other intervention that could impact the lymphatic system.

For more information about setting the baseline for an L-Dex assessment, see the main IFU, "SOZO Pro Instructions for Use."

All prior measurements with the L-Dex Assessment may be viewed in MySOZO as well. For more about accessing MySOZO, see the main IFU, "SOZO Pro Instructions for Use."

4.3 Availability of L-Dex Assessment

Each Assessment must have a separate license. Only Assessment types with licenses are available to the user. The available Assessment types for a given user are displayed in the SOZOapp and MySOZO. Therefore, the L-Dex Assessment and associated results displays are only available if licensed. For more information about licensing of Assessments and determining the availability of Assessments for users, see the main IFU, "SOZO Pro Instructions for Use."

4.4 Choosing The Proper Assessment

It is recommended that only the most appropriate and relevant assessment is selected for each patient, taking into consideration patient diagnosis and the individual needs of the patient as determined by their health care provider.

5 L-Dex® Analytics

Click **ANALYTICS** at any time to return to the Analytics page on the MySOZO Clinician home page (**Figure 1**).

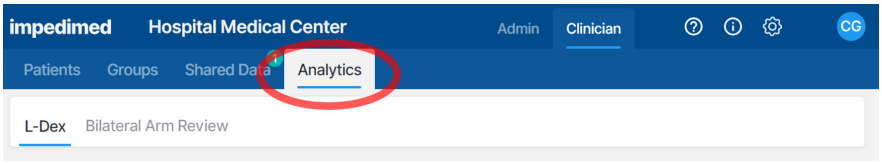


Figure 1. ANALYTICS tab (red oval)

The Analytics dashboard provides tools to track both Lymphedema Assessments and how well the clinic is following the Lymphedema Surveillance Program. Information on protocol compliance and patients in the Surveillance Program who have triggered is provided as well as all patient data for Patient & Measurement Overview and Patient Distribution. The information in the analytics dashboard is updated hourly.

The **Controls** menu at the top of each tab allows the clinician to display and filter the data as desired.

5.1 Lymphedema Surveillance Program

This program utilizes ImpediMed's Test, Trigger, Treat® protocol for early detection and intervention of cancer-related lymphedema The evidence-based protocol option for the Lymphedema Surveillance Program is supported by the findings of the PREVENT trial[2,3] and McDuff, et al.[4] The PREVENT trial followed patients at 3-6 month intervals for 3 years. The study showed that a prospective surveillance program using BIS was able to identify and treat patients for subclinical lymphedema with improved patient outcomes compared to those monitored with tape measure. While McDuff found that while the

[2] Ridner SH, Dietrich MS, Boyages J, et al. A Comparison of Bioimpedance Spectroscopy or Tape Measure Triggered Compression Intervention in Chronic Breast Cancer Lymphedema Prevention. *Lymphatic Research and Biology* 2022.

[3] Ridner SH, Dietrich MS, Cowher MS, et al. A Randomized Trial Evaluating Bioimpedance Spectroscopy Versus Tape Measurement for the Prevention of Lymphedema Following Treatment for Breast Cancer: Interim Analysis. *Ann Surg Oncol* 2019.

[4] McDuff SGR, Mina AI, Brunelle CL, et al. Timing of Lymphedema Following Treatment for Breast Cancer: When Are Patients Most At-Risk? *Int J Radiat Oncol Biol Phys* 2018.

risk of lymphedema is greatest in the first 3 years, the lymphedema risk is directly impacted by therapy received with regional lymph node radiation which correlated to late onset lymphedema. Therefore, the experts in the study recommended regular intervals for 5 years post treatment.

5.2 Surveillance Program Tab

The Surveillance Program tab (**Figure 2**) displays the program overview, the number of patient measurements that are upcoming or are overdue, the number of patients triggered, and the compliance to the surveillance protocol.

Note: this dashboard only includes patients who have a baseline measurement selected and are included in the lymphedema surveillance program as selected in the patient profile (Surgery Date or Alternate Date are entered in the patient profile). The Surgery Date or Alternate Date entered in the profile is used as the starting date for the surveillance protocol (see 5.2.5 Further Definitions).

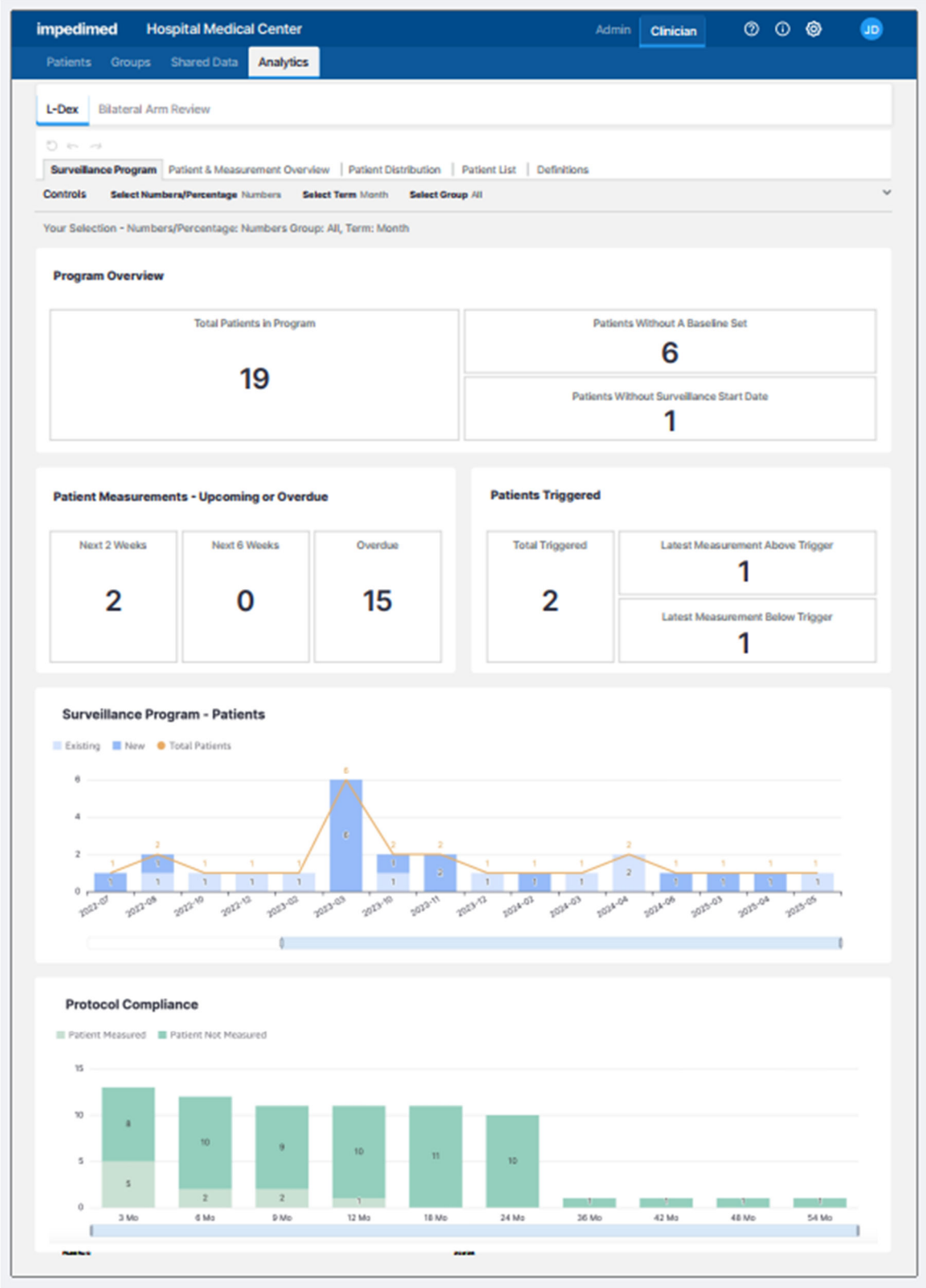


Figure 2. Lymphedema Surveillance Program tab

5.2.1 Patient Measurements – Upcoming or Overdue

This displays the total number of patients in the surveillance program who are due for their measurement in the next 2 weeks, 6 weeks and who are overdue. The due date for a patient is calculated based on the surveillance start date and the defined frequency within the surveillance program protocol. Measurement status is determined by the surveillance program start date and protocol intervals selected.

Example: For every 6-month protocols, a patient is counted as having a measurement if a measurement occurs within 3 months on either side of the due date.

5.2.2 Patients Triggered

This displays the number of patients in the surveillance program whose L-Dex score has triggered as 6.5 L-Dex units above their baseline.

- **Total Triggered**: The total number of patients whose L-Dex score has ever equaled or exceeded the L-Dex threshold of a 6.5 L-Dex unit increase from baseline in any limb being monitored.
- **Latest Measurement Above Trigger**: The number of patients whose latest L-Dex score is equal to or above 6.5 L-Dex units above their baseline. If a patient has bilateral measurements with two triggers, only one will be counted as a trigger and if any of the latest measurements remain as triggered, it will take precedence. See definitions for further explanation.
- **Latest Measurement Below Trigger**: The number of patients who had previously triggered, but whose latest L-Dex values have fallen to less than 6.5 above their baseline.

5.2.3 Surveillance Program - Patients

This provides the number of patients in the surveillance program who were measured during the selected time period.

Note: patients with multiple measurements in a single time period will be counted only once. Patients with a measurement in multiple time periods will be counted for each time period where a measurement was taken.

5.2.4 Protocol Compliance

This provides the total number of surveillance program patients who took a measurement within the target protocol time period vs. those patients who did not take a measurement for each measurement target date. The surveillance program target dates are defined below and calculated for each patient based on the Surveillance Start Date of the patient and the surveillance program protocol selected for the clinic. Patients will be considered measured if they have had a measurement halfway between the protocol timepoints. For example, if the protocol interval is every 6 months, the patient will be counted as measured if they had a measurement within 3 months on either side of the due date.

5.2.5 Further Definitions

- **Surveillance Program Start Date**: The Surgery/Alternate Date should be the first treatment date that had an impact on the Lymphatic system. This date will be used to track when measurements should be started and when the follow up measurements should be taken based on the Surveillance Program Protocol. The Surgery/Alternate date is an optional field that is specified in the patient profile for individual patients but is required for a patient to be included in the Surveillance Program Dashboard in Analytics.
- **Testing Frequency**: The surveillance program protocol, either evidence-based or custom, should be determined by the SOZO administrator and will be utilized clinic-wide.
  - Evidence-Based Protocol
    - Years 1-3: Every 3 months
    - Years 4-5: Every 6 months
    - Year 6: Every 12 months
  - Custom Protocol
    - Duration up to 6 years
    - Testing frequency:
      - Years 1-2: Every 3, 4 or 6 months
      - Years 3-6: Every 3, 4 or 6 months

5.3 Patient & Measurement Overview

This dashboard (Figure 3) provides insight into the usage of SOZO Pro and the L-Dex Analysis for Lymphedema Assessment. It provides outputs based on all Lymphedema Patients, Total Measurements, and Device used within the clinic.

Figure 3. Patient & Measurement Overview dashboard

5.3.1 Patients Measured

This chart provides the total count of L-Dex patients who have had at least one measurement in the defined time period, selectable by Month, Quarter or Year from the Controls menu.

Note: a patient with multiple measurements within a time period will be counted only once. The Total Patients Measured is a count of all unique L-Dex patients who have had at least one measurement.

5.3.2 Measurements

This chart provides the count of measurements taken on L-Dex patients over time, selectable by Month, Quarter or Year from the controls menu. The total Measurements is a count of all measurements taken on all L-Dex patients.

5.3.3 Device List & Utilization

This table provides the total number of Patients and Measurements, as defined above, by SOZO Pro serial number.

5.4 Patient Distribution

This dashboard (**Figure 4**) provides a summary of all L-Dex patients by their at-risk limb/s (demographics) and L-Dex Output. Only patients who have the L-Dex assessment type are included.

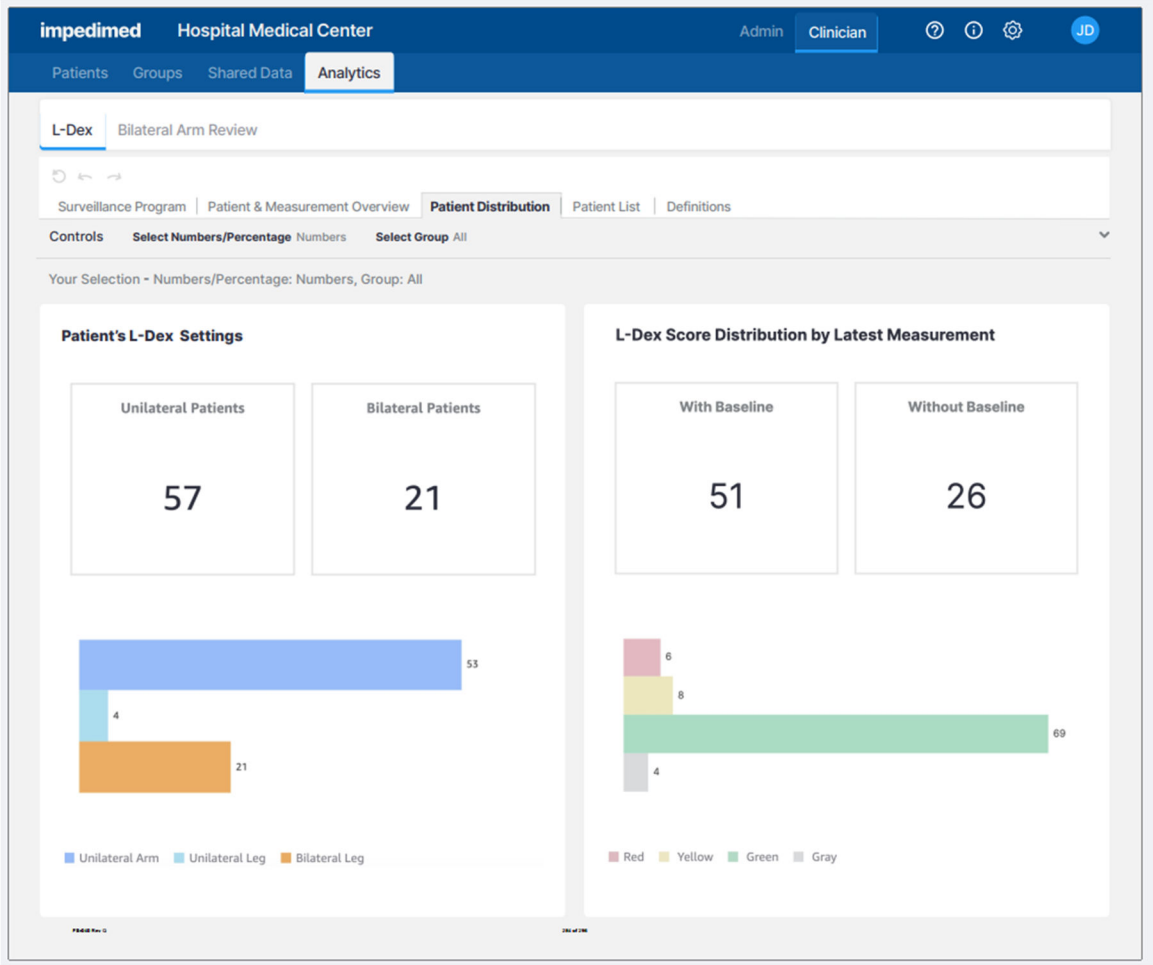


Figure 4. Patient Distribution dashboard

5.4.1 Patient's L-Dex Settings

This chart provides a count of patients who have selected Unilateral or Bilateral L-Dex Assessment settings. It can be displayed as a number or as a percentage.

The distribution of the number of Bilateral Leg, Unilateral Arm and Unilateral Leg patients is shown in bar graphs.

Note: The total number of L-Dex patients in the clinic is equal to sum of unilateral patients and sum of bilateral patients.

5.4.2 L-Dex Score Distribution by Latest Measurement

This chart provides a count of the latest L-Dex measurement values and if there is a baseline associated with each reading. It can be displayed as the number or as a percentage.

The distribution of the number of latest lymphedema measurements categorized as grey, green, yellow and red is displayed.

Note: these categories have a different meaning depending on whether or not a baseline has been set.

Table 1. L-Dex Categories without a Baseline

Grey (Below Normal L-Dex)	L-Dex scores below 3 standard deviations less than the population mean (below -10).
Green (Normal L-Dex)	L-Dex scores between 3 standard deviations less than the population mean and 2 standard deviations greater than the population mean (-10 to 6.5).
Yellow (Normal L-Dex)	L-Dex scores between 2 and 3 standard deviations greater than the population mean (6.5 to 10).
Red (Above Normal L-Dex)	L-Dex scores above 3 standard deviations greater than the population mean (above 10).

Table 2. L-Dex Categories with a Baseline

Grey (Below Normal L-Dex Change)	Change in L-Dex scores from the baseline that are greater than 3 standard deviations below the baseline (change greater than -10).
Green (Normal L-Dex Change)	Change in L-Dex scores from the baseline between 3 standard deviations less than the baseline and 2 standard deviations greater than the baseline (change between -10 and +6.5).
Yellow (Normal L-Dex Change)	Change in L-Dex scores from the baseline between 2 and 3 standard deviations greater than the baseline (change between +6.5 and +10).
Red (Above Normal L-Dex Change)	Change in L-Dex scores from the baseline that are greater than 3 standard deviations above the baseline (change greater than +10).

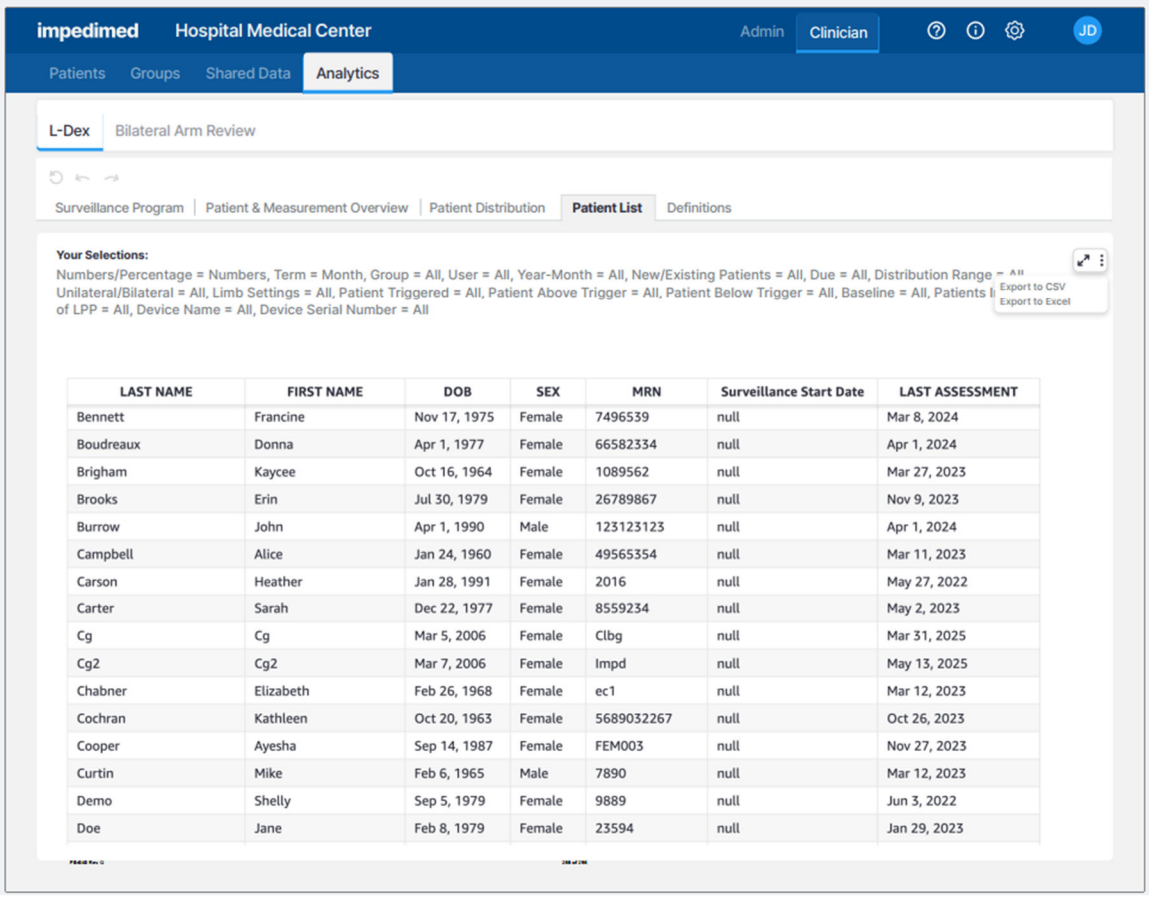
Note: patients with no measurements will not have a baseline and will not be included in the bar graph output. Bilateral patients will include two measurements, one for each at risk limb.

Note: total L-Dex patients in the clinic are equal to sum of unilateral patients and sum of bilateral patients. The total # of measurements will be equal to the sum of unilateral patients and two times the sum of bilateral patients.

5.5 Patient List

The Patient list displays a list of the first name, last name, date of birth, sex, MRN, surveillance start date, and last assessment date (**Figure 5**).

- By default, this is the full list of L-Dex patients contained in the database. Each column can be sorted by ascending or descending order.
- If the clinician drills down on a graph the patient list is filtered according to the criteria of the graph.



LAST NAME	FIRST NAME	DOB	SEX	MRN	Surveillance Start Date	LAST ASSESSMENT
Bennett	Francine	Nov 17, 1975	Female	7496539	null	Mar 8, 2024
Boudreaux	Donna	Apr 1, 1977	Female	66582334	null	Apr 1, 2024
Brigham	Kaycee	Oct 16, 1964	Female	1089562	null	Mar 27, 2023
Brooks	Erin	Jul 30, 1979	Female	26789867	null	Nov 9, 2023
Burrow	John	Apr 1, 1990	Male	123123123	null	Apr 1, 2024
Campbell	Alice	Jan 24, 1960	Female	49565354	null	Mar 11, 2023
Carson	Heather	Jan 28, 1991	Female	2016	null	May 27, 2022
Carter	Sarah	Dec 22, 1977	Female	8559234	null	May 2, 2023
Cg	Cg	Mar 5, 2006	Female	Clbg	null	Mar 31, 2025
Cg2	Cg2	Mar 7, 2006	Female	Impd	null	May 13, 2025
Chabner	Elizabeth	Feb 26, 1968	Female	ec1	null	Mar 12, 2023
Cochran	Kathleen	Oct 20, 1963	Female	5689032267	null	Oct 26, 2023
Cooper	Ayesha	Sep 14, 1987	Female	FEM003	null	Nov 27, 2023
Curtin	Mike	Feb 6, 1965	Male	7890	null	Mar 12, 2023
Demo	Shelly	Sep 5, 1979	Female	9889	null	Jun 3, 2022
Doe	Jane	Feb 8, 1979	Female	23594	null	Jan 29, 2023

Figure 5. Patient list, Analytics

5.6 Navigation

- **Exporting data**: To export the data shown for any individual chart or table on the screen, select the chart or table element. A menu on the upper right side of the chart or table will appear, select the "**…**" and then "**Export to CSV**" (Figure 6).

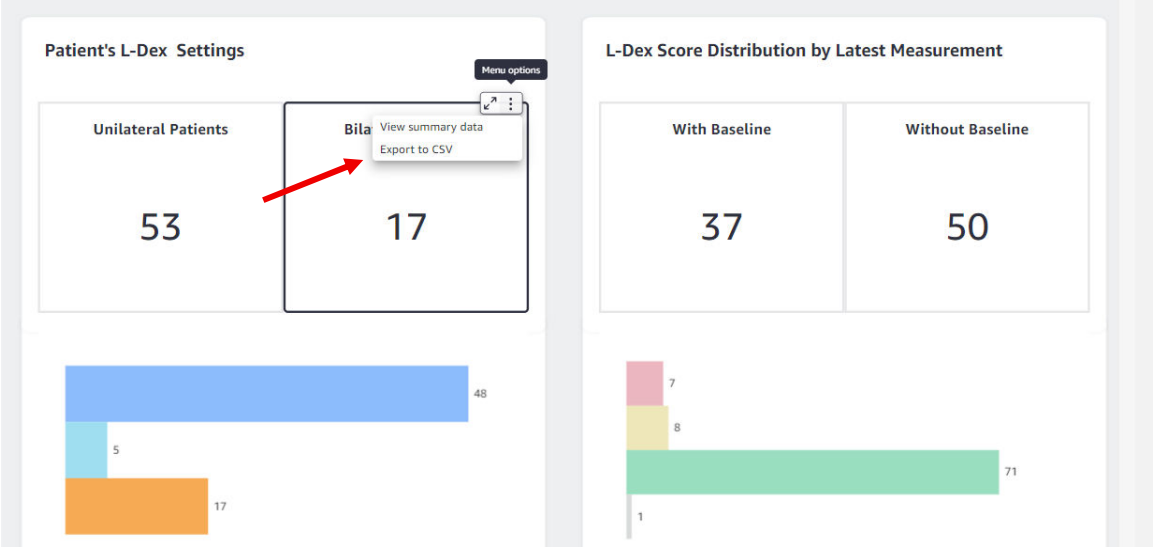


Figure 6. Export to CSV function (red arrow)

- **Accessing Patient List**: By default, all patients with an L-Dex Assessment are included in the patient list. To get patient data associated with a particular chart or table element, select the data element (e.g., Overdue patients, Patients Measured in Time Period, Serial Number, Bilateral Leg Patients etc.) and click once to highlight the chart or table, then click again for the popup to appear. Select "**Go to Patient Details**" (**Figure 7**). This will open the Patient List tab to show the patients associated with that data element.

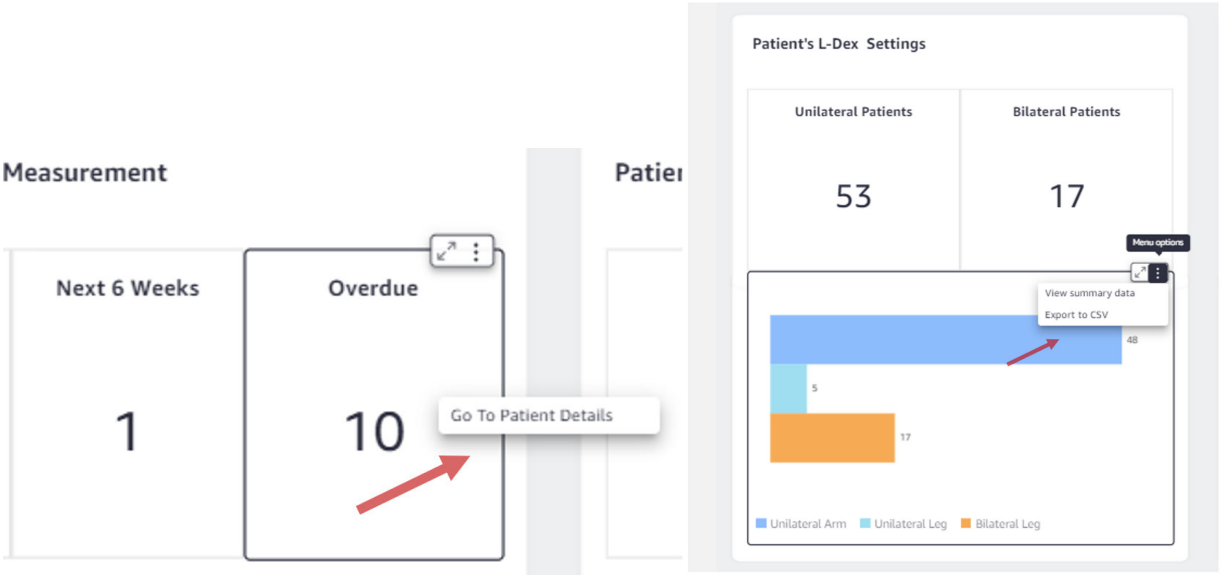


Figure 7. Accessing patient list and summary data (red arrows)

- **Customizing and/or Filtering Outputs**: To filter all outputs on a tab, the following selections can be modified from the Controls menu (**Figure 8**) at the top of each page:
    - Show output in % vs. Numbers (if applicable).
    - Modify time periods displayed (Month, Quarter, Year).
    - Filter by Groups.

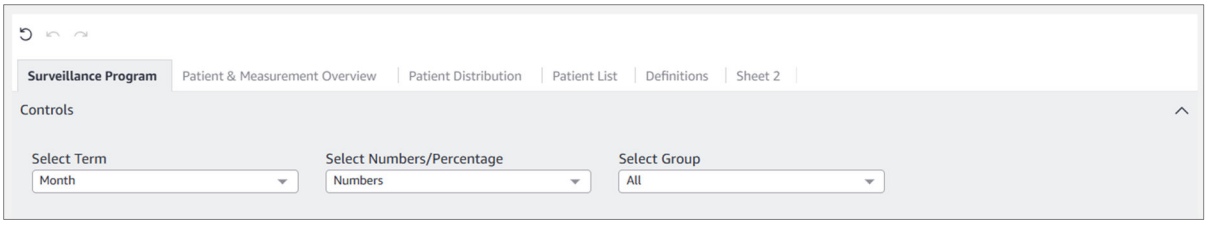


Figure 8. Controls menu

- **Undoing Filters**: Select the 'Reset' control located on the top left of the page to remove all filters chosen.