



2026 California Thoracic Society Annual Educational Conference & Chronic Obstructive Pulmonary Disease Symposium

Thursday March 12, 2026-Sunday March 15, 2026

Earn up to 19 CME/CEU/MOC Credits
Jointly Provided by AKH Inc., Advancing Knowledge in Healthcare
and the California Thoracic Society



PORTOLA HOTEL & SPA
AT MONTEREY BAY

Thursday March 12, 2026 (6 CME/CEU/MOC Credits)

COPD Symposium

Friday March 13, 2026 (6.5 CME/CEU/MOC Credits):

Advances in Interventional Pulmonary, Remote Monitoring in Pulmonary and Sleep Medicine,
Approach to Symptom Management in Chronic Lung Disease and Critical Care

Saturday March 14, 2026 (6.5 CME/CEU/MOC Credits)

Sepsis and Shock, Extracorporeal Membrane Oxygenation, Inpatient Pulmonary
Complications of Cancer Care

Sunday March 15, 2026

Fellow and Resident Track Symposium



Friday March 13, 2026

Advances in Interventional Pulmonary

8:00 am – 8:10 am: Welcome and Introduction

8:10 am – 8:55 am: Keynote Address – Evolution of Bronchoscopy in Diagnosing Lung Nodules

- **Christine Argento, MD (Johns Hopkins)** - This speaker will discuss the recent advances in bronchoscopy from radial EBUS, to electromagnetic navigation, to robot technologies, and how advancement has improved lung nodule diagnosis.

8:55 am – 9:20 am: Implications of the new TNM9 staging for lung cancer

- **Colleen Channick, MD (UC Los Angeles)** - This speaker will discuss the new TNM staging system, how staging is currently performed, and how to approach staging in the patient with suspected lung cancer.

9:20 am – 9:45 am: Management of Central Airway Obstruction

- **Raed Alalawi, MD (Arizona-Phoenix)** - This speaker will discuss how interventional pulmonary practitioners can manage and treat central airway obstruction.

9:45 am – 10:10 am: The Changing Landscape of Pleural Disease Management

- **Joon Chang, MD (Stanford)** - This speaker will discuss advances in management of pleural disease by the interventional pulmonologist including when to use an intrapleural catheter, and when to use

10:10 am – 10:20 am: Question and Answer

10:20 am – 10:50 am: Break

Remote Monitoring in Lung Disease and Sleep Medicine

10:50 am – 11:15 am: Developing a home spirometry program

- **Steven Hays, MD (UC San Francisco)** - This speaker will discuss how to approach the development of a home spirometry program to monitor lung disease, how to use digital health technologies to integrate results into the EHR.

11:15 am – 11:40 am: Home Non-Invasive Ventilator Monitoring

- **Christal Hawkins, RRT (UC San Diego)** - This speaker will review how to monitor home non-invasive ventilators for compliance and for adequate control of sleep disordered breathing.

11:40 am – 11:55 am: Pro: Virtual Pulmonary Rehabilitation is Ready for Prime Time

- **Aimee Kizziar, RRT (UC Davis)** - This speaker will argue in favor of virtual pulmonary rehabilitation programs.

11:55 am – 12:10 pm: Con: Virtual Pulmonary Rehabilitation is not ready for Prime Time

- **Julia Rigler, BA, RRT (UC San Francisco)** - This speaker will argue against virtual pulmonary rehabilitation programs.

12:10 pm – 12:20 pm: Question and Answer

12:20 pm – 1:00 pm: Awards Ceremony

1:00 pm – 2:00 pm: Lunch

Hands On Session:

2:00 pm – 3:00 pm: **Robotic Bronchoscopy** Raed Alalawi, MD (Arizona-Phoenix) & Joon Chang, MD (Stanford) **Cough Monitoring** Lauren Eggert, MD (UCSF); **Endobronchial Ultrasound** Pranjal Patel, MD (Stanford); **Home NIV** Krystle Leung, MD (Stanford)

3:00 pm – 3:20 pm: Break

Approach to Symptom Management in the Pulmonary Patient

3:20 pm – 3:45 pm: Addressing the Unmet Needs of Refractory Chronic Cough

- **Krishna Sundar, MD FCCP FAASM ATSF (UC Davis)** - This speaker will discuss the etiology behind refractory chronic cough and the treatment approaches for management

3:45 pm – 4:10 pm: Frailty in Pulmonary and Critical Care Medicine

- **Jonathan Singer, MD MPH (UC San Francisco)** - This speaker will discuss the concept of frailty and how it impacts health in patients with lung disease. The speaker will also discuss how frailty can change as lung disease is treated.

4:10 pm – 4:35 pm: Palliative Care for the Patient with Chronic Lung Disease

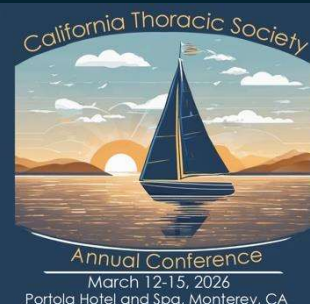
- **Grace Amadi, MD (UC Davis)** - This speaker will discuss how palliative care teams can benefit patients with chronic various lung disease including ILD, COPD, and pulmonary hypertension.

4:35 pm – 5:00 pm: Palliative Care for the Patient with Critical Illness

- **B. Corbett Walsh, MD, MBE (UC Los Angeles)** - This speaker will discuss how palliative care teams can benefit the inpatient with advancing lung disease, the importance of advance care planning, and palliative care in the intensive care unit.

5:00 pm – 5:10 pm: Question and Answer

5:30 pm – 7:00 pm: Women in Pulmonary, Critical Care, and Sleep Medicine (NON-CME) – Food and beverages will be served





Dr. Steven Hays is a Professor of Medicine at the University of California, San Francisco (UCSF), where he also serves as the Medical Director of the UCSF Advanced Lung Disease and Lung Transplant Programs. Dr. Hays completed his medical degree at the University of Kansas, followed by pulmonary/critical care and lung transplantation fellowships at UCSF and Stanford. His clinical practice focuses on advanced lung diseases and lung transplantation. Dr. Hays is involved in cutting-edge research to improve outcomes for patients with advanced lung disease and lung transplants, contributing to numerous peer-reviewed publications and clinical trials.



Home Spirometry in Lung Transplantation

Steven Hays, MD

Professor of Medicine

Medical Director Lung Transplant Program and
Transplant Digital Health

University of California, San Francisco

Disclosures

- I have the following relationships with ACCME defined ineligible companies:
 - CareDx Advisory Board
- I **WILL/WILL NOT** discuss off-label use and/or investigational use of any drugs or devices.

Transplant Care Now

Follow up clinic at 3, 6, 12, 15, 18, 21 months....

To the lab for weekly or monthly blood draw....

To the hospital for scheduled surveillance (PFTs, CT, Bronch) at 3, 6, 12, 18, 24 months....

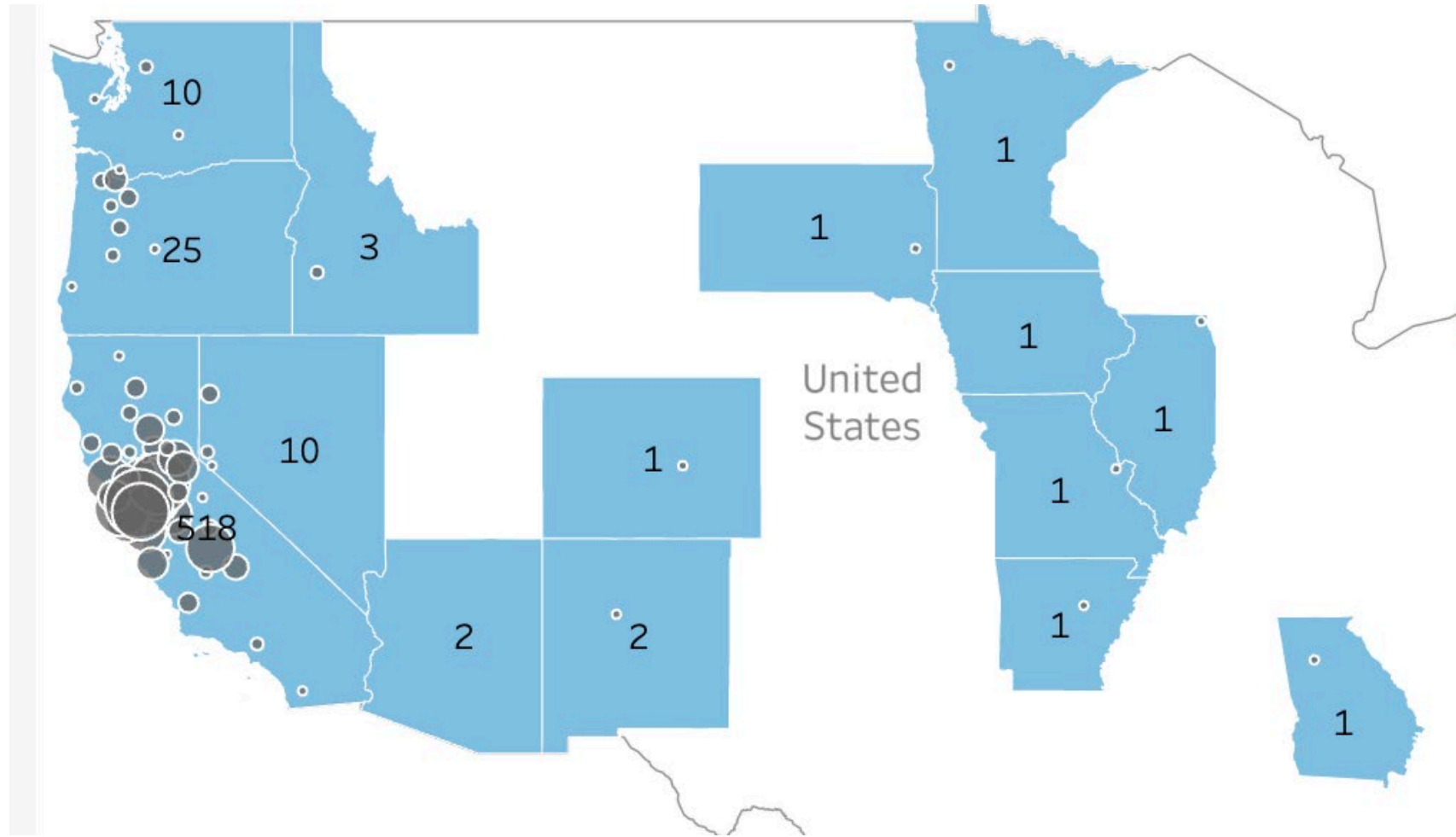


Standard
Immunosuppression
Protocol

Standard Prophylaxis
Protocol

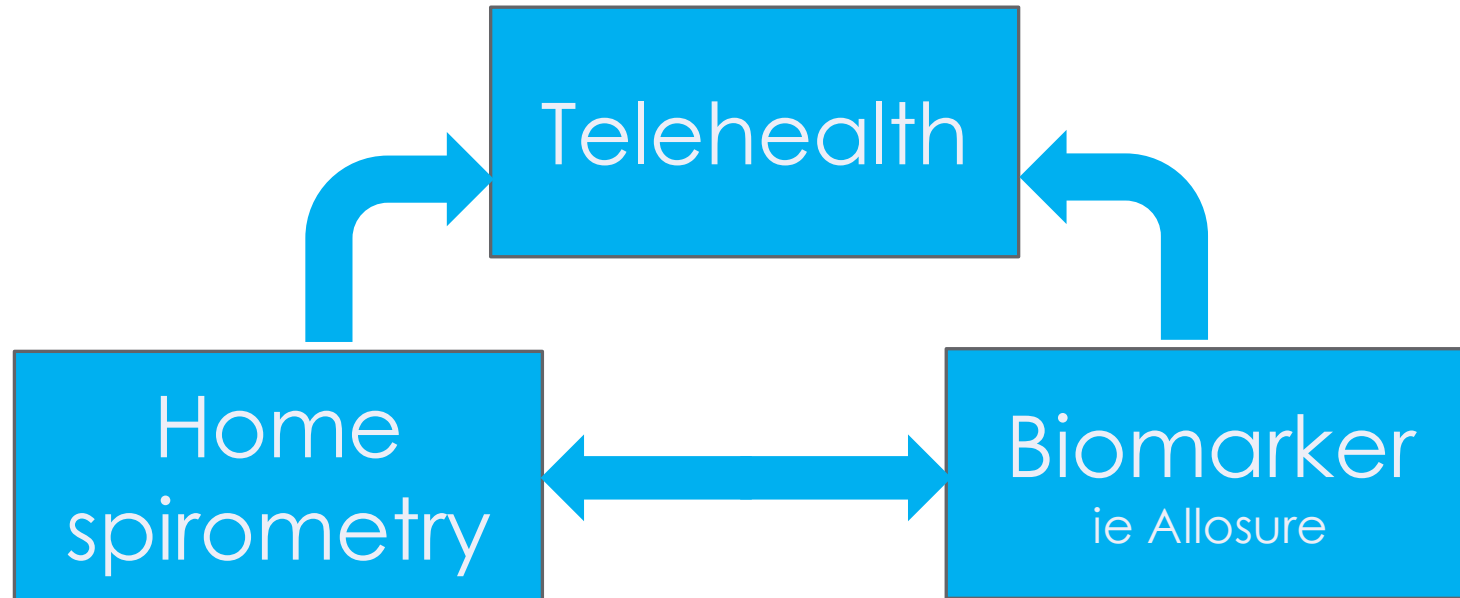
Not patient centric,
not personalized
and not precision
medicine

Patients are Widespread



Modern Transplant Care

↑access, maintain “high touch” care, ↓reduce patient burden



Why? Portable, Inexpensive, Accurate



Diseases monitored with Home Spirometry?



COPD



Interstitial Lung Disease



Asthma



Cystic Fibrosis, Neuromuscular Disease



Lung Transplantation

Why Monitor Lung Function in LTx?



Lung transplant recipients have high risk of graft dysfunction



Decline in FEV₁ often precedes symptoms



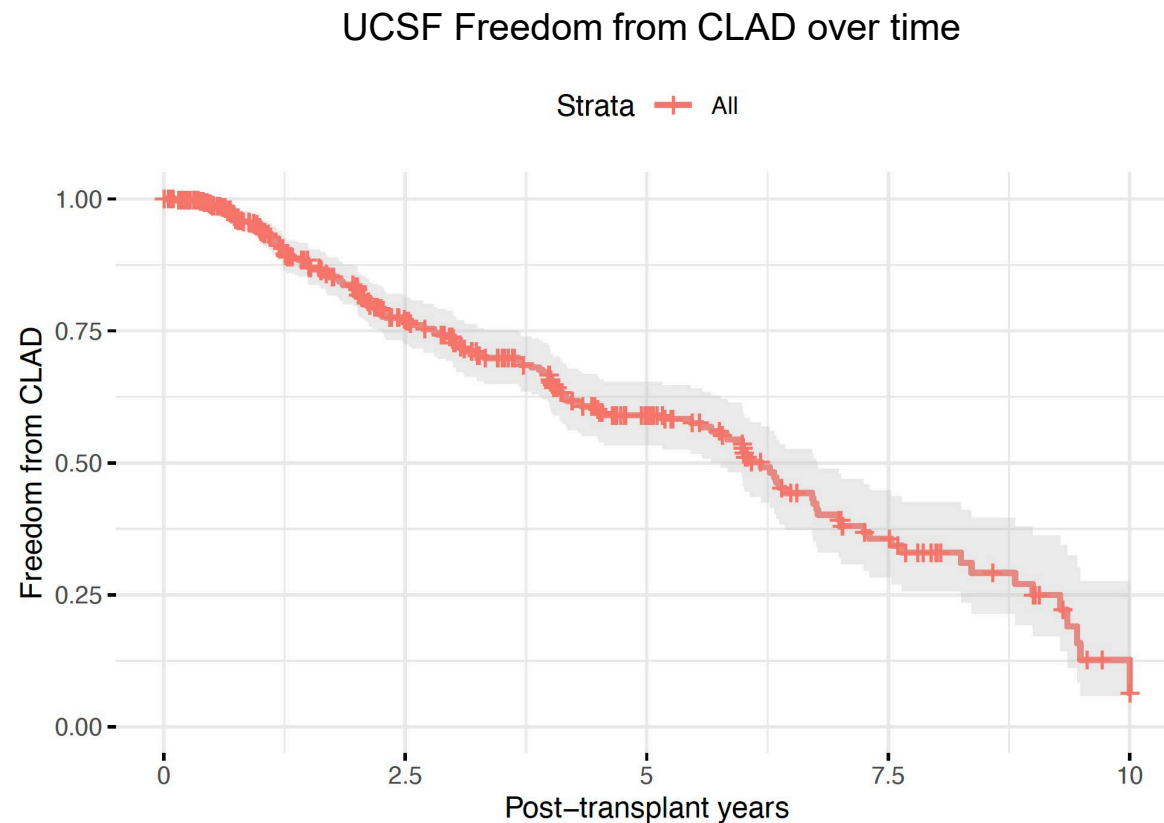
Key complications: acute rejection, infection, CLAD



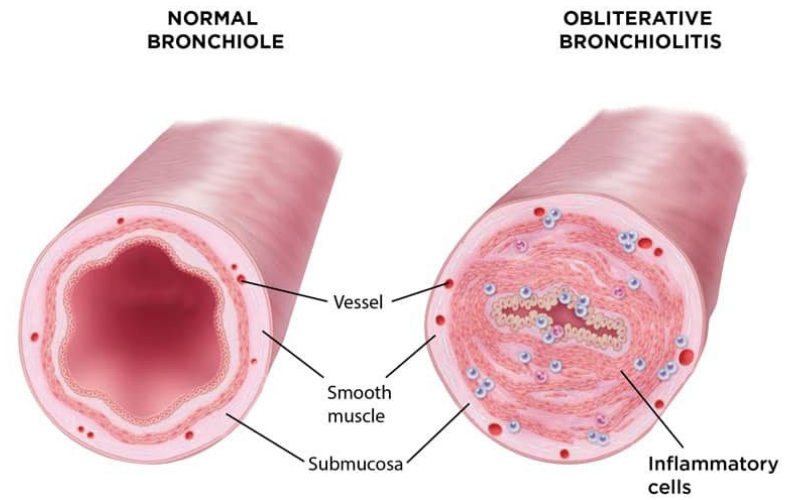
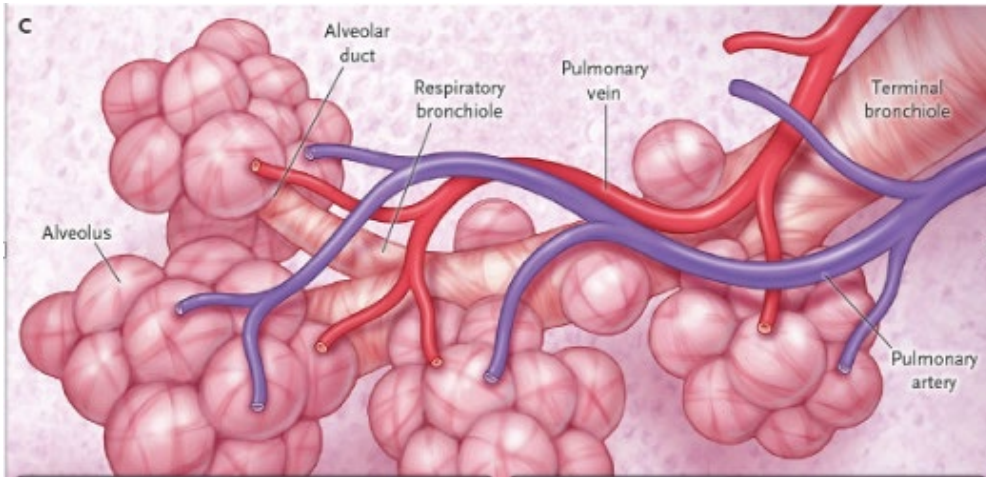
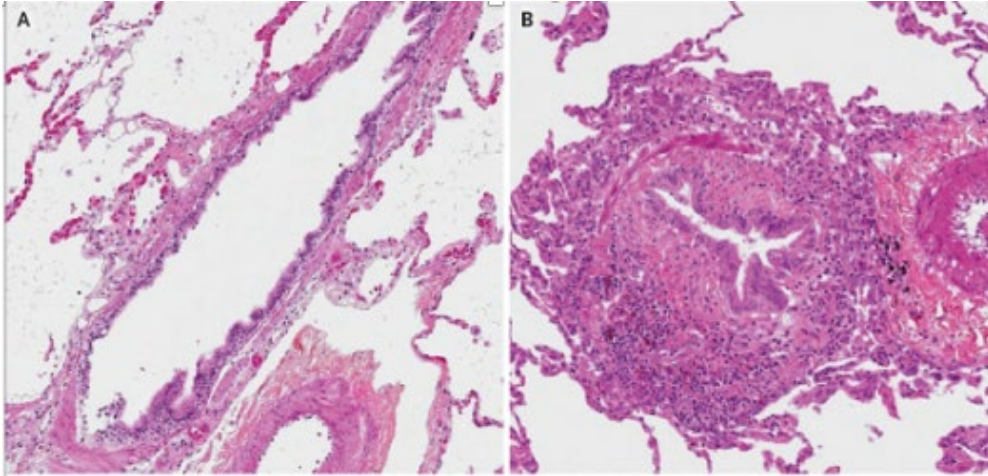
Early detection allows earlier intervention

Early Detection of both Acute and Chronic Lung Allograft Dysfunction is important

Delays in detection and treatment may lead to worse outcomes



Bronchiolitis Obliterans



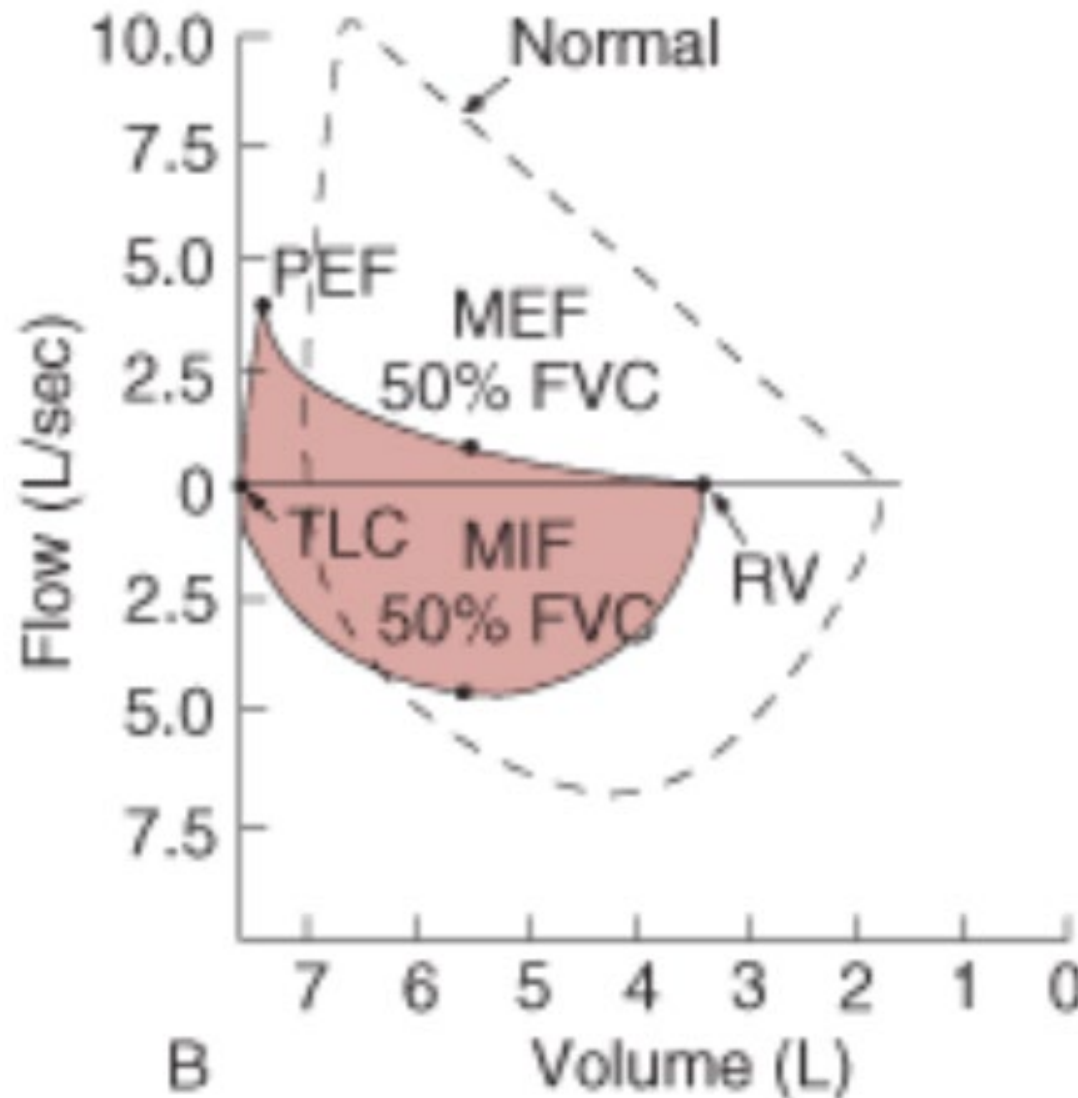
Bronchiolitis Obliterans Diagnosis

Diagnosis by biopsy is unreliable

Diagnosis is therefore clinical (BOS) based on persistent **obstructive pulmonary defect** (FEV1 < 80% of baseline)

Limitations of Lab Spirometry

- Travel and Expense
- Infrequency of measurement: Clinic spirometry typically every 1–3 months
- Early changes in lung function may be missed



Home spirometry advantages and prior limitations

- Home spirometry provides the potential advantages
 - Frequent monitoring
 - Facilitates telehealth
 - Avoiding aerosol-generating procedures in healthcare setting
- Challenges identified from prior work
 - Maintaining adherence
 - Providing feedback
 - Providing engagement
- Non-adherence to home spirometry is related to a decreased freedom from BOS

Prior experience with home spirometry in Lung Transplantation



Adherence to home spirometry generally decreases over time due to multiple factors

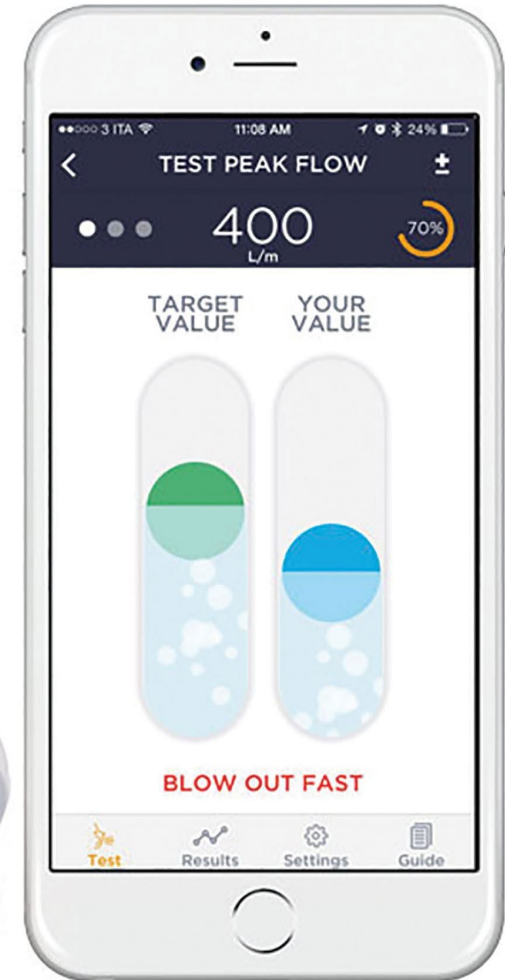
Lack of understanding
Lack of feedback
Lack of engagement



Non-adherence to home spirometry is related to a decreased freedom from BOS

Goals of home spirometry

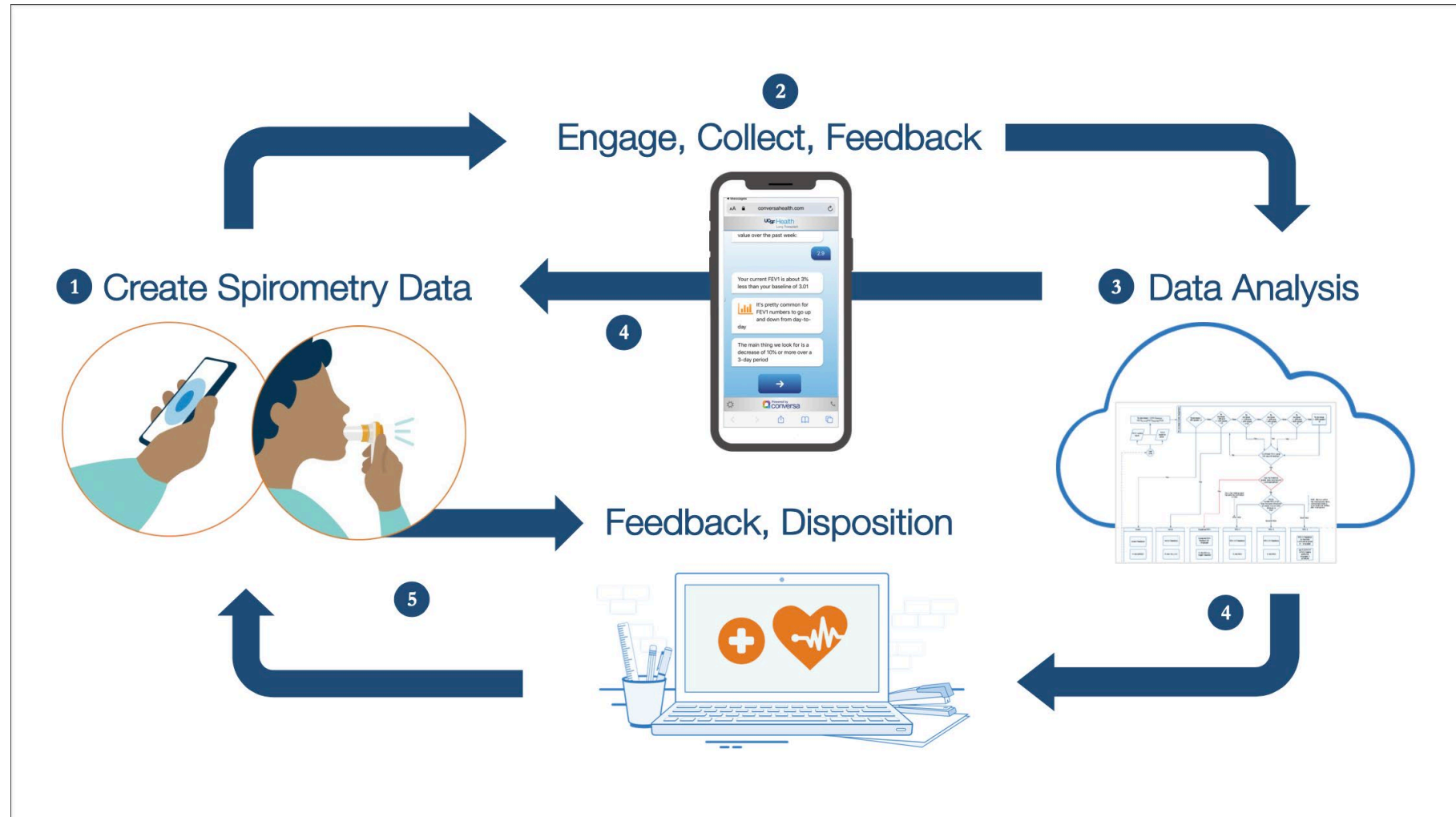
- Obtain spirometry on a weekly basis to survey for graft dysfunction
- Obtain spirometry in real time to assess remote symptoms
- Identify changes in lung function earlier
 - Diagnose acute graft dysfunction
 - Diagnose CLAD earlier
- Collect feedback
- Iterate based on experience and feedback



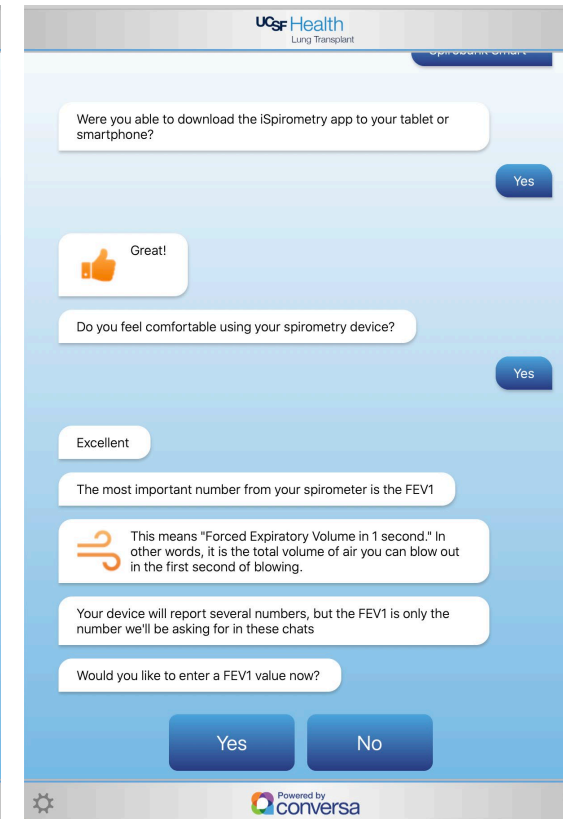
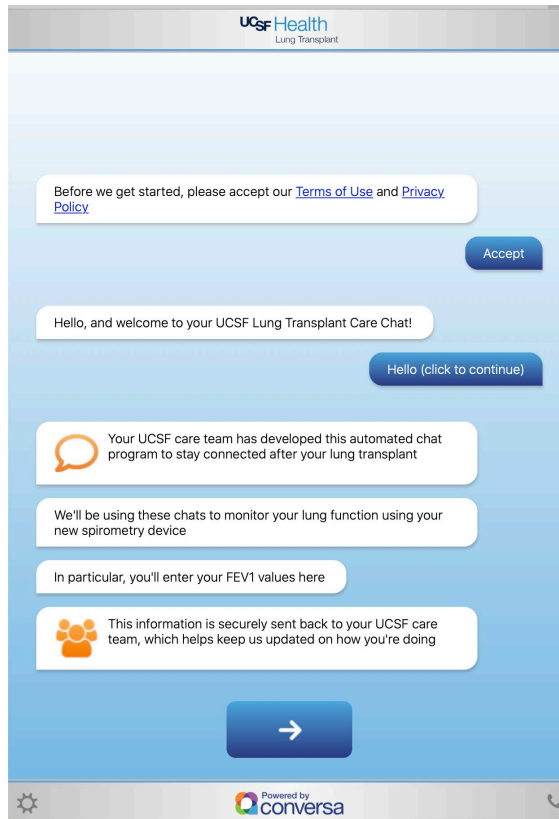
Anticipated Needs

- ✓ Needs to be easy to use
- ✓ Needs to provide accurate data
- ✓ Needs to manage data flow
- ✓ Needs to manage alerts
- ✓ Needs to give feedback to patients
- ✓ Needs to provide data to the care team
- ✓ Needs to be sustainable

Engage, Collect, Feedback, Disposition, Track



Engagement Platform



Real-time feedback and FEV₁ reports

UCSF Health
Lung Transplant

Last time we chatted, your FEV₁ had decreased more than 10%

Let's see how it looks today...

Would you like a reminder on how to measure your FEV₁?

No

Please enter your highest FEV₁ value over the past week:

2.4

This FEV₁ is about 36% less than your baseline of 3.75

We'd like you to take another FEV₁ reading now, so we can make sure this number is accurate. Please enter that value here:

2.4

Your care team is monitoring your FEV₁ entries

Please continue to monitor yourself for fever, shortness of breath, and worsening cough

You can reach out to your Nurse Coordinator or call (415) 353-4145 if you have questions

Powered by **conversa**

cdhi UCSF Digital Patient Experience

Lung Transplant Virtual Care - Patient Level Results

Center for Digital Health Innovation

Report Date: 3/25/2022 6:20:45AM

MRN	Enroll Date	Program Month	FEV ₁ Count	Most Recent Value	Median (IRQ)	Baseline FEV
	08/10/2020	19	64	0.81	1 (0.96 - 1.44)	1.73

FEV₁ Trend

The chart displays FEV₁ values over time from 9/3/2020 to 2/3/2022. The y-axis ranges from 0.0 to 1.8. A solid green line represents the baseline at 1.73. A dashed green line indicates a 10% decrease threshold at approximately 1.55. A dashed red line indicates a 20% decrease threshold at approximately 1.38. Blue dots represent individual FEV₁ readings, which show a general downward trend over the period.

Legend:

- @FEV
- @Baseline
- - - @10% Decrease
- - - @20% Decrease

Home spiro alerts in EMR

> CDS Alert Message 44 unread, 53 total

Status	Message Date	PCP	Resulted	Reslt Date	PI
New CDS: ?	04/28/2022 03:...	Hu, Gene			X
New CDS: ?	04/28/2022 10:...	Rodriguez, Jesus ...			X
New CDS: ?	04/29/2022 10:...	Crane, Douglas Go...			X
Read CDS: ?	04/29/2022 10:...	Santana, Adriana			X
New CDS: ?	04/29/2022 12:...	Lakowsky, Alexan...			X
New CDS: ?	04/30/2022 12:...	Shabbir, Muhammm...			X
New CDS: ?	04/30/2022 12:...	Hays, Steven Rich...			X
New CDS: ?	04/30/2022 01:...	Gharagozlou, Parh...			X
New CDS: ?	05/01/2022 10:...	Bishop, Roy Lennox			X
New CDS: ?	05/01/2022 12:...	Padilla, Adriana R...			X
New CDS: ?	05/02/2022 12:...	Hsiao, Patricia Lai...			X
New CDS: ?	05/02/2022 09:...	Krpan, John Bren...			X
New CDS: ?	05/02/2022 09:...	Algranati, Margar...			X
Read CDS: ?	05/02/2022 10:...	Kaur, Tarandeep			X
New CDS: ?	05/02/2022 10:...	Hu, Gene			X
New CDS: ?	05/02/2022 12:...	Levine, Claudia			X
New CDS: ?	05/02/2022 01:...	Ritter, Michelle Lee			X
New CDS: ?	05/02/2022 03:...	Huang, Michael Je...			X
New CDS: ?	05/02/2022 06:...	Provider, None Pe...			X
New CDS: ?	05/02/2022 07:...	Sripathi, Saroja			X
New CDS: ?	05/03/2022 09:...	Tava, Etechiunt			X

Female, 44 y.o., 8/21/1977
MRN: 35318038
Phone: 530-681-6945 (M)
PCP: Adriana Santana, DO
Coverage: Health Net/Woodla...

Message

Ucsf, Fhir Conversa → P Lung Transplant Care Chat

Received: 1 week ago

The patient exceeded risk threshold RED on Fri, 29 Apr 2022 17:26:30 GMT based on established flags

Question(s) with flags that caused the Alert (up to last 5 values recorded)

Question: FEV1 assessment
Date: 2022-04-29
Color: red
Answers: FEV1 (2.88), a 11% decrease compared to baseline (3.25)

Date: 2022-04-21
Color: red
Answers: FEV1 (2.88), a 11% decrease compared to baseline (3.25)

Date: 2022-04-20
Color: yellow
Answers: FEV1 (3.07) is within a 5 - 10% decrease compared to baseline (3.25)

Question: Sustained red?
Date: 2022-04-29
Color: red
Answers: Red sustain at 0-p

Patient Feedback

The screenshot displays the Epic patient message interface. At the top, a navigation bar includes icons for Schedule, In Basket, Patient Station, Chart, Encounter, Refill Medication, Telephone Call, AntiCoag, Status Board, Remind Me, Genomic Indicators, Lexicomp, and Unit. Below this is a secondary navigation bar with buttons for SnapShot, Synopsis, Chart Review, Results Review, Communications, Patient Station, Care Everywhere, and Patient Message. The main content area is titled "Patient Message" and shows a message addressed to Jessica B Taekman and Richard Goetz. The subject is "home spiro". The message body contains the following text: "Thank you for using the UCSF lung health chat. Your participation is helping us keep track of your lung transplant health. Your FEV1 measure is lower than your prior baseline. If you have no new symptoms, continue to monitor your spirometry daily x 3. If your lung function stabilizes, then continue to monitor weekly. Please call your coordinator if you have any new symptoms." Below the text is a handwritten signature of Steven Hays, MD. The sender's information is: Steven Hays, MD, Professor of Clinical Medicine, Medical Director, Advanced Lung Disease and Transplantation, UCSF Division of Pulmonary, Critical Care, Allergy & Sleep Medicine, Steven.Hays@ucsf.edu. On the right side, there are several configuration panels: "Message Type" (set to Patient Message), "Dates" (Delay sending until and Notify me if not read by, both set to 8/15/2021), "Options" (Do not allow patient reply and Send patient reply to me, both unchecked), and "Tasks & Attachments" (Attachment, Appointment, General Questionnaire, and Hstory Questionnaire, each with an "Add" button).

Epac Schedule In Basket Patient Station Chart Encounter Refill Medication Telephone Call AntiCoag Status Board Remind Me Genomic Indicators Lexicomp Unit

RG

Snapshot Synopsis Chart Review Results Review Communications Patient Station Care Everywhere Patient Message

Patient Message


To: ✓ Jessica B Taekman ✓ Richard Goetz

home spiro

Arial 11 B I U [List Icon] [Undo Icon] [Redo Icon] [SmartText Icon] [Send Icon] [Refresh Icon]

Thank you for using the UCSF lung health chat. Your participation is helping us keep track of your lung transplant health. Your FEV1 measure is lower than your prior baseline. If you have no new symptoms, continue to monitor your spirometry daily x 3. If your lung function stabilizes, then continue to monitor weekly.

Please call your coordinator if you have any new symptoms.



Steven Hays, MD
Professor of Clinical Medicine
Medical Director, Advanced Lung Disease and Transplantation
UCSF Division of Pulmonary, Critical Care, Allergy & Sleep Medicine
Steven.Hays@ucsf.edu

Message Type
Patient Message

Dates
Delay sending until
Date
Notify me if not read by
8/15/2021

Options
 Do not allow patient reply
 Send patient reply to me

Tasks & Attachments ⓘ
Attachment + Add
Appointment + Add
General Questionnaire + Add
Hstory Questionnaire + Add

COVID Results/Vaccine Summary

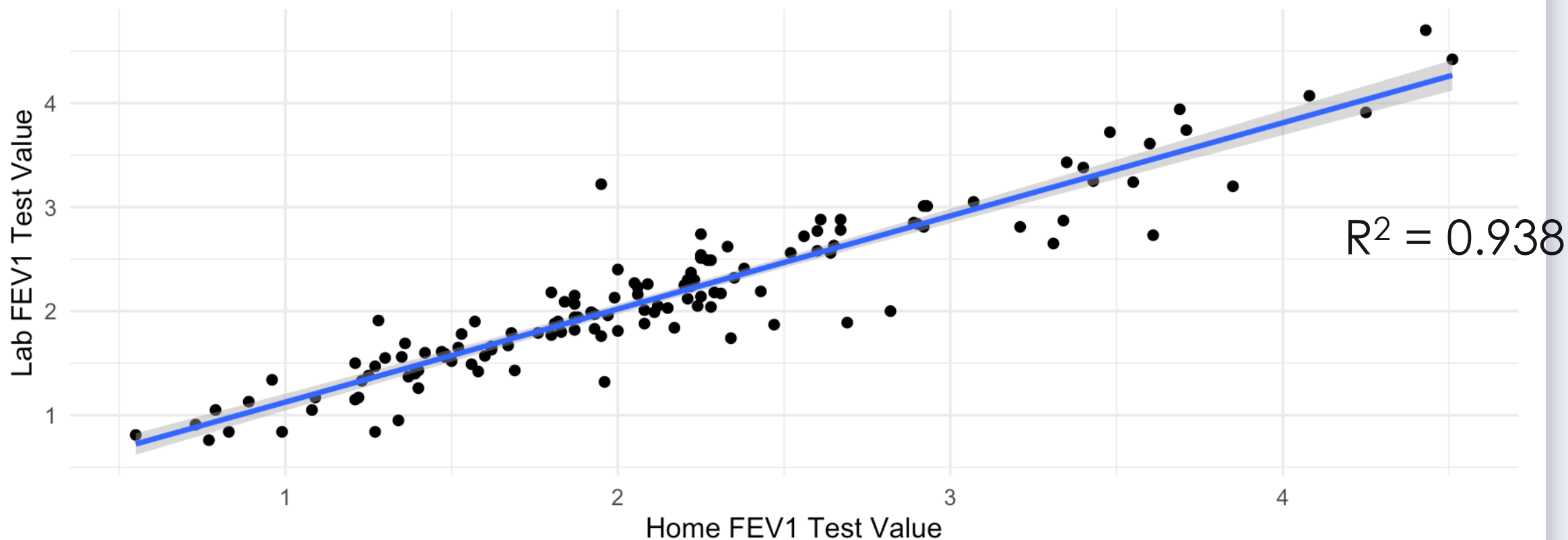
Gracielle Custodio Galli, RN
Lung Coordinator
Coverage: Aetna/Us/Managed C...
Allergies: No Known Allergies
Care Team:
Sven Joshua Walderich, MD
PCP - General
Mycophenolate: Y
Tacrolimus: Y

TRANSPLANTS
Lung Txp #1: 6/2/2021 (67d)

NONE
BP: 138/101 ! >1 day
Heart Rate: 67 >1 day
Temp: 36.6 °C (97.9 °F) >1 day
SpO2: 95% >1 day
Weight: 115.7 kg (255 lb 1.6 oz) †
BMI: 32.39 kg/m² †

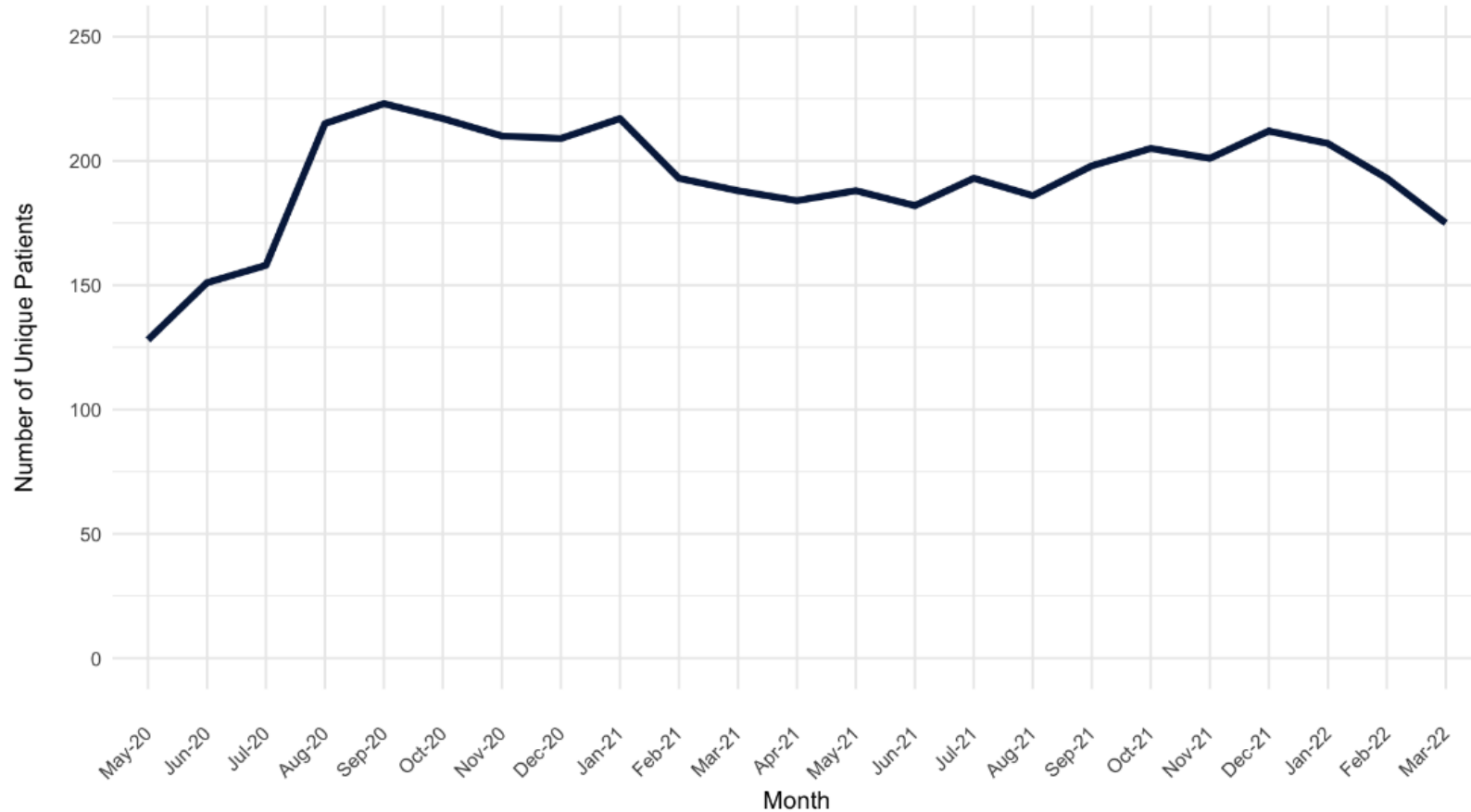
Home spirometry highly correlates with Lab spirometry

Home vs Lab FEV1 Scatterplot



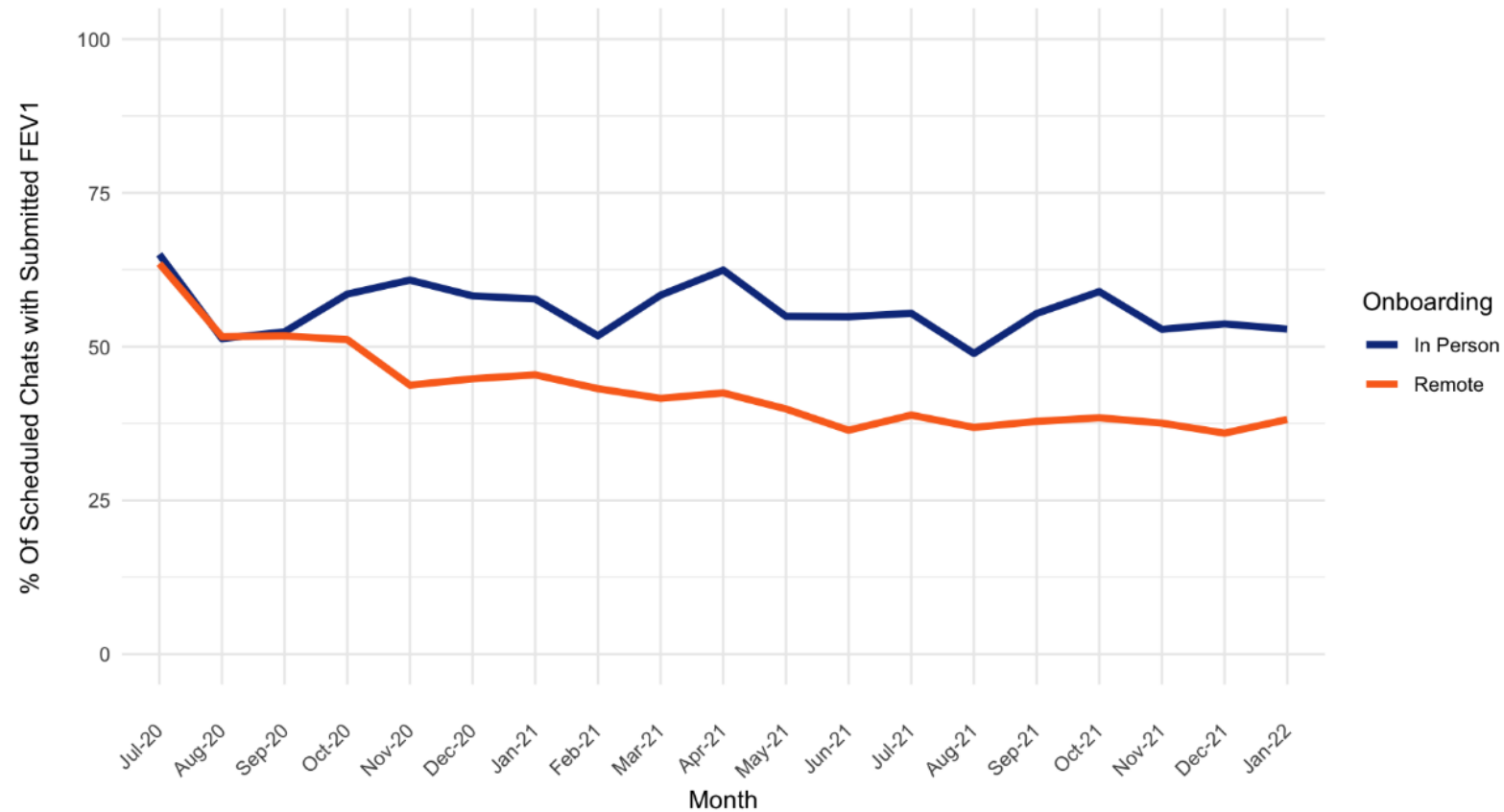
Unique Patient FEV1 Submissions per Month

Number of Unique Patients Submitting at Least One FEV1 Each Month



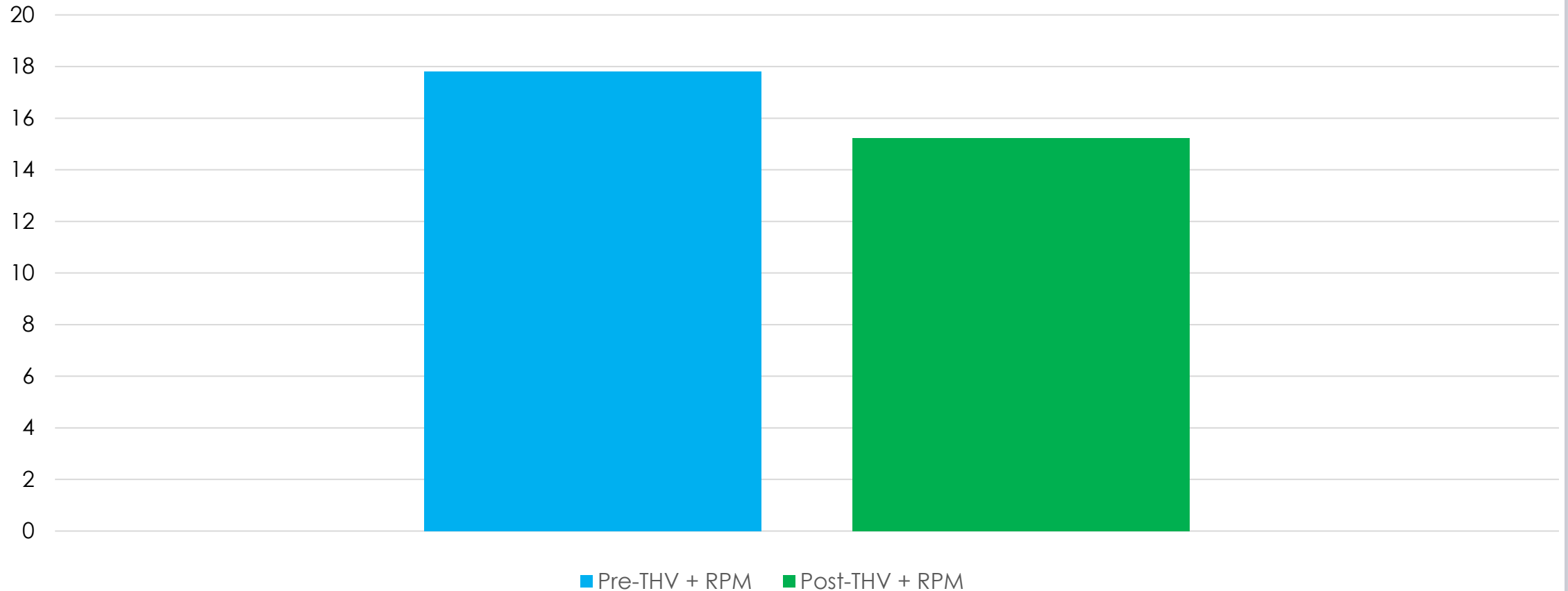
Adherence to home spirometry

Patient Adherence in Submitting Home FEV1



Replacing in-person clinic and spirometry with THV and home spirometry and hospitalization rate in year 1

% of patients hospitalized 90-365 days post lung transplantation





Design and implementation of a digital health home spirometry intervention for remote monitoring of lung transplant function

Anobel Y. Odisho, MD, MPH,^{a,b} Andrew W. Liu, BA,^a Ali R. Maiorano, BA,^a
M. Olivia A. Bigazzi, MS,^a Eli Medina, MBA,^a Lorriana E. Leard, MD,^c
Rupal Shah, MD,^c Aida Venado, MD,^c Alyssa Perez, MD,^c Jeffrey Golden, MD,^c
Mary Ellen Kleinhenz, MD,^c Nicholas A. Kolaitis, MD,^c Julia Maheshwari, MD,^c
Binh N. Trinh, MD, PhD,^d Jasleen Kukreja, MD, MPH,^d
John Greenland, MD, PhD,^c Daniel Calabrese, MD,^c Aaron B. Neinstein, MD,^{a,e}
Jonathan P. Singer, MD, MS,^c and Steven R. Hays, MD^c

From the ^aCenter for Digital Health Innovation, University of California, San Francisco, California; ^bDepartment of Urology, University of California, San Francisco, California; ^cPulmonary, Critical Care, Allergy and Sleep Medicine Division, Department of Medicine, University of California, San Francisco, California; ^dDepartment of Surgery, University of California, San Francisco, California; and the ^eEndocrinology Division, Department of Medicine, University of California, San Francisco, California.

Challenges

- Multiple platforms made the system complex
- Patients did not love the chatbot – repetitive, slow
- Data not seamlessly integrated into EMR
- Data not as high quality – limited quality control, hand-entered data could not live in EMR

Implementing ZEPHYRx app

ATS Standard Series: 3 tests (w/in 150ml of each other)

Share Progress

09:58 PM 05/13/2020

Great Job!

FVC	% EXPECTED	This is a measure of lung size
3.15L	88 %	

FEV1	% EXPECTED	Air expelled in the first second
2.42L	77 %	

FEV1/FVC	% EXPECTED	Ratio of the above, indicating lung function
77%	88%	

That was a great test!

We still need another test before we can finish.

[Next Test](#)

Share Progress

09:59 PM 05/13/2020

Great Job!

FVC	% EXPECTED	This is a measure of lung size
2.90L	81 %	

FEV1	% EXPECTED	Air expelled in the first second
2.31L	74 %	

FEV1/FVC	% EXPECTED	Ratio of the above, indicating lung function
80%	91%	

We still need another test before we can finish.

[Next Test](#)

Share Progress

09:59 PM 05/13/2020

Great Job!

FVC	% EXPECTED	This is a measure of lung size
2.84L	79 %	

FEV1	% EXPECTED	Air expelled in the first second
1.89L	60 %	

FEV1/FVC	% EXPECTED	Ratio of the above, indicating lung function
67%	76%	

**You need to blow out faster!
Try to force out all the air in your lungs in the first second.**

We still need another test before we can finish.

[Next Test](#) [Quit & Save](#)

Sharing Enabled

12:57 PM 05/19/2020

Great Job!

FVC	% EXPECTED	This is a measure of lung size
3.00L	79 %	

FEV1	% EXPECTED	Air expelled in the first second
2.22L	73 %	

FEV1/FVC	% EXPECTED	Ratio of the above, indicating lung function
74%	92%	

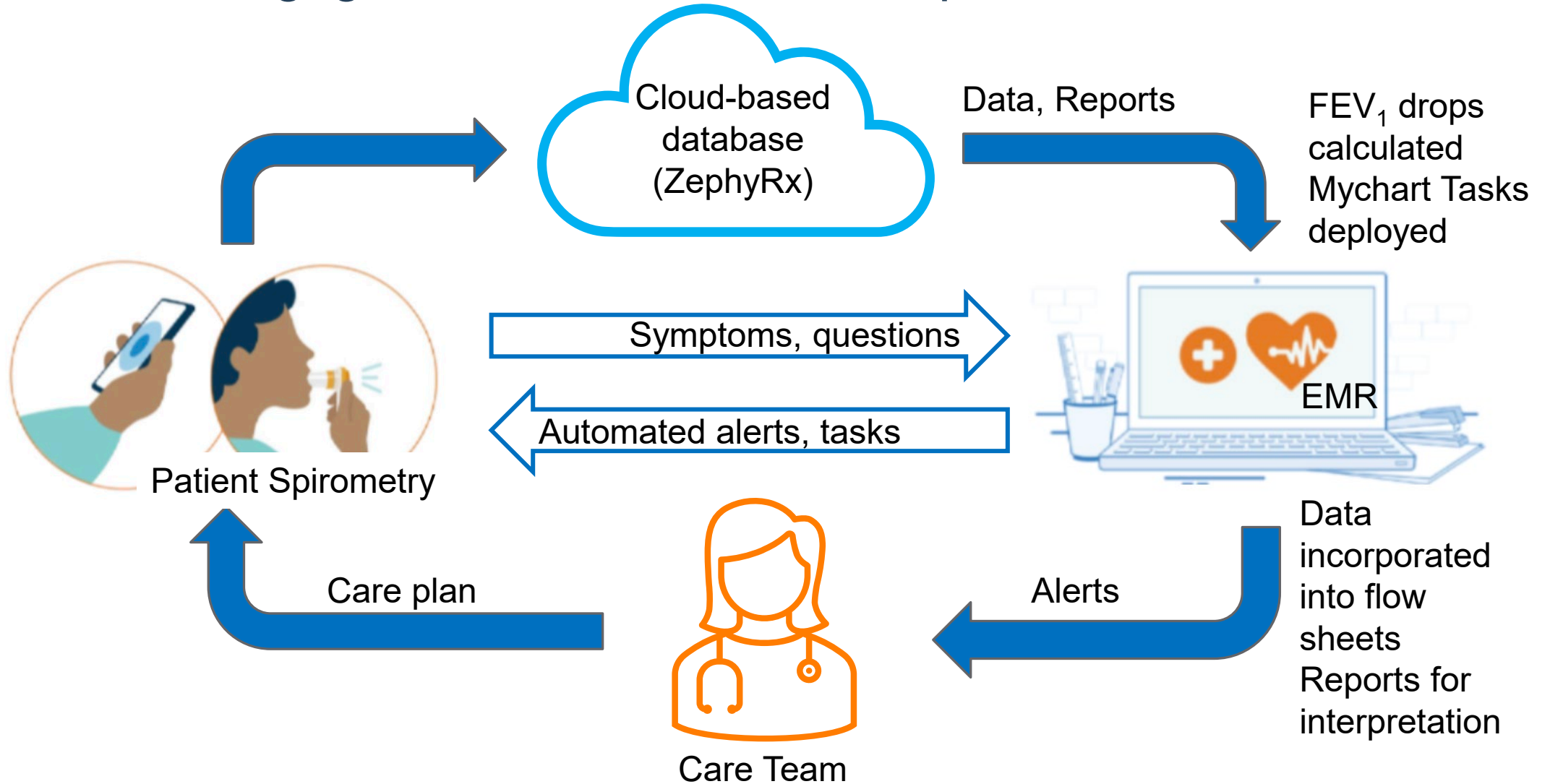
That was a great test!

You're all set! Click Next to see your report.

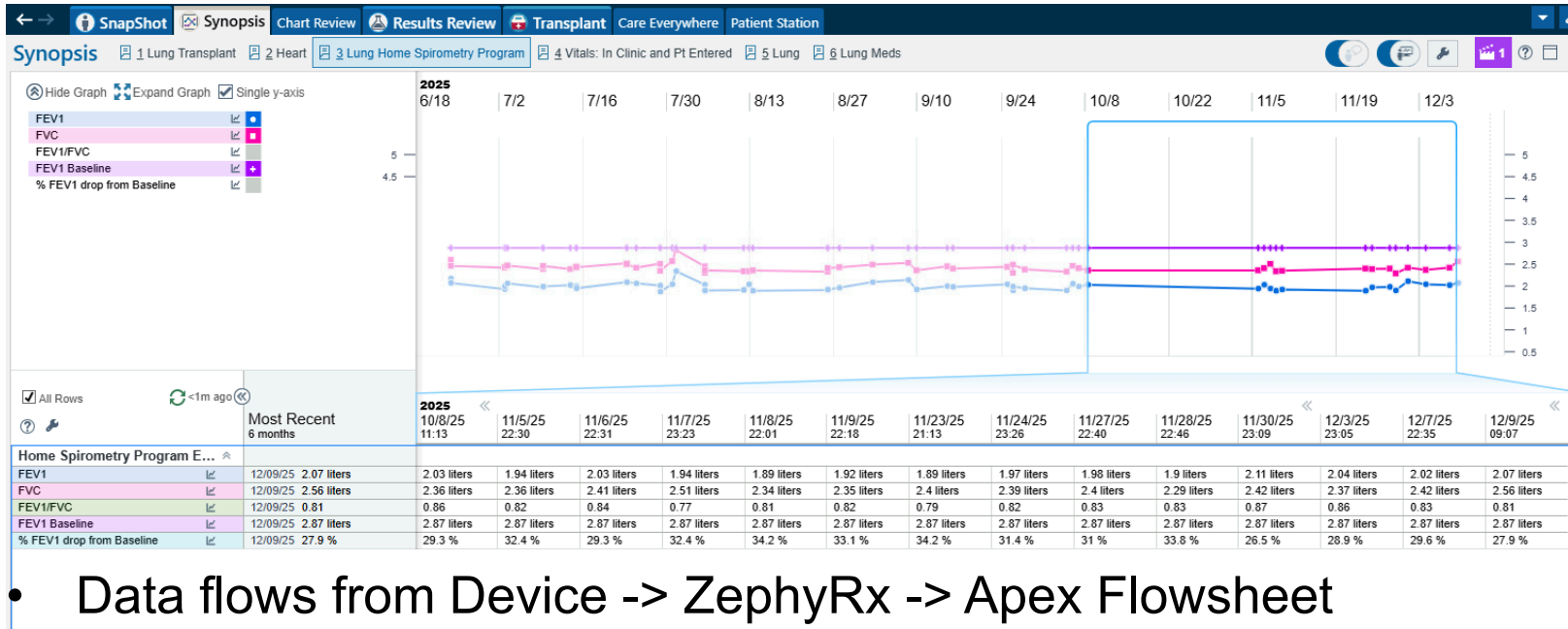
[View Report](#)

Need Help? First contact your physician, then email: support@zephyrx.com

Engage, Collect, Feedback, Disposition, Track



Integrated Flowsheets



- Data flows from Device -> ZephyRx -> Apex Flowsheet
- Algorithms built into CareCompanion give feedback and instructions
- Care Companion sends home spirometry reminders prior to appointments and for missing data
- Monthly reports are automatically downloaded to Epic with flow volume loops, data and trend lines

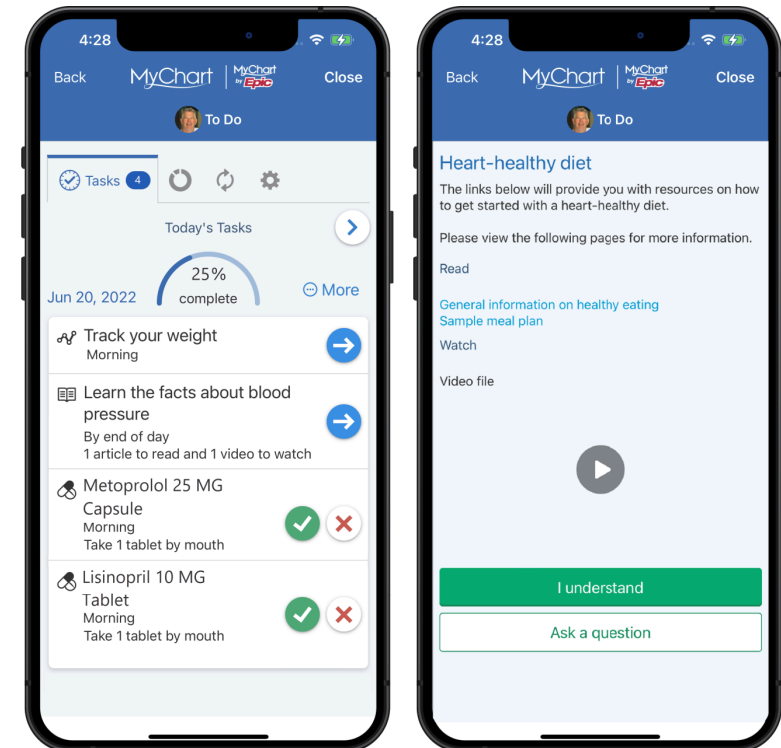
Apex Care Companion

Reminder: Take Your Home Spirometry Before Your Appointment

Your post-lung transplant appointment is coming up. If you haven't taken a reading yet this week, please remember to take a home spirometry reading before your visit so your clinic team has the most accurate information for your upcoming appointment. If you are using the Breathe Easy app by Zephyrx, then your readings will automatically be shared with your care team.

[Need a refresher on how to take a reading? Watch this short video for tips](#)

Done Skip



Care Companion Feedback



FEV1 Decrease Follow-Up

3:47 PM

Thank you for taking your FEV1 measurements. Your latest FEV1 measurement has dropped by more than 10%. Your care team is monitoring your results. Please report any new respiratory symptoms to your nurse and continue monitoring your lung function from home.

Complete

Skip



You're on a roll! Thank you for staying on top of your spirometer readings

3:47 PM

Keeping track regularly is a great way to stay on top of your lung health. Keep it up!

Complete

Skip



Let's get back on track!

3:47 PM

We use your regular home spirometry readings to monitor your lung function. Now is a great time to take a reading and keep the momentum going! If you have any questions or concerns, don't hesitate to reach out to your nurse. We're here to help!

Go →

Care Companion Feedback

It's been 3-months since your transplant, how is it going?

3:47 PM

Go →

Please answer the following questions

For the To Do task It's been 3-months since your transplant, how is it going?

Do you feel comfortable using the spirometer?

Yes

No

Do you feel confident using Breathe Easy?

Yes

No

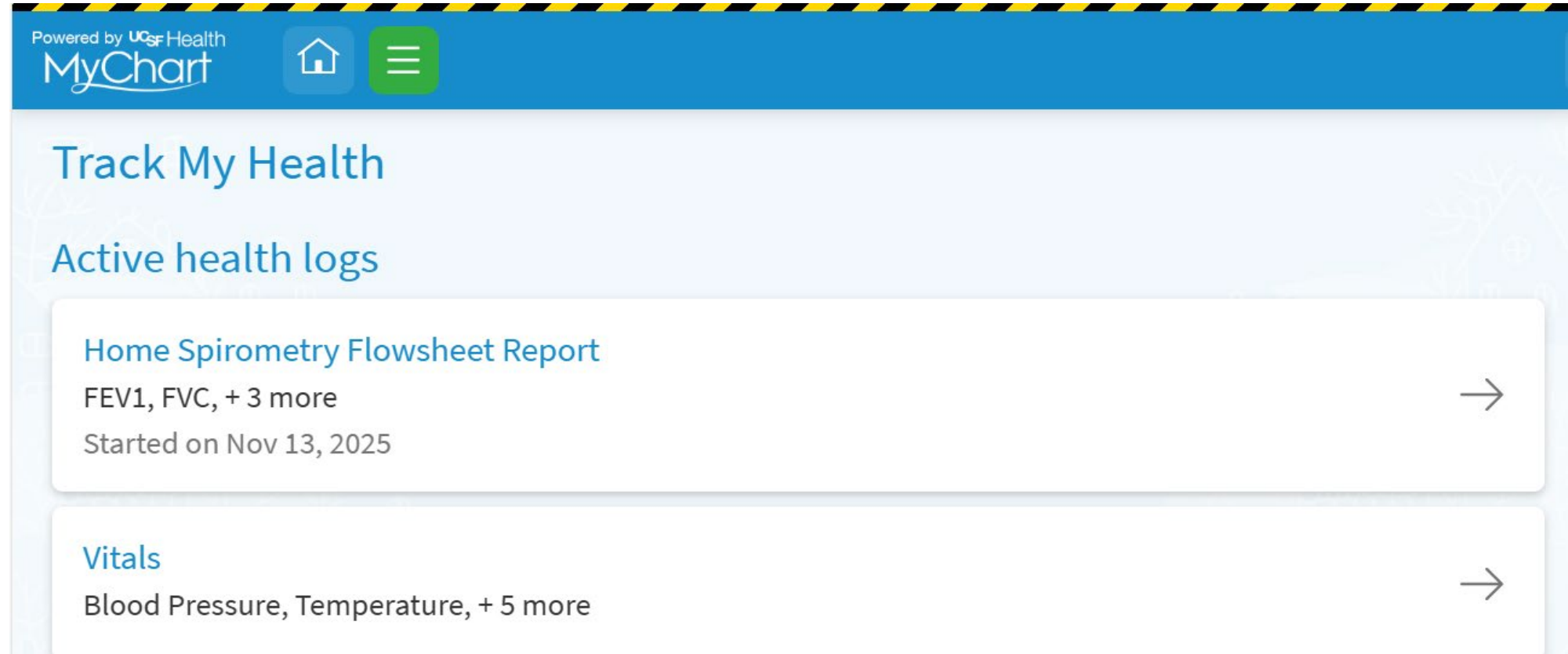
Do you feel supported by us the clinic?

Yes

No

Continue

MyChart Patient Visualization



The screenshot shows the MyChart patient visualization interface. At the top, there is a blue header bar with the text "Powered by UCSF Health MyChart" on the left, a home icon, and a menu icon. Below the header, the main content area is titled "Track My Health" and "Active health logs". There are two log entries: "Home Spirometry Flowsheet Report" and "Vitals".

Powered by UCSF Health
MyChart

Track My Health

Active health logs

Home Spirometry Flowsheet Report
FEV1, FVC, + 3 more
Started on Nov 13, 2025

Vitals
Blood Pressure, Temperature, + 5 more

Epic Order for Home Spirometry

HOME SPIROMETRY PROGRAM ENROLLMENT ✓ Accept ✗ Cancel

Status: **Normal** Standing Future

Class: Ancillary Performed **Clinic Performed** Hospital Performed

Scheduling Instructions: [+ Add Scheduling Instructions](#)

Comments: Have you instructed patient to set up an onboarding appointment with Breathe Easy team? **Yes or No** ▾

⌵ Has Home Spirometer has been dispensed? **Yes or No** ▾

What is the serial number of the dispensed spirometer (located underneath the barcode on the box)? *******

ⓘ The Comments field contains unfilled variables ("*") or SmartLists.**

Reference Links:

- [Program Information](#)

∨ [Additional Order Details](#)

ⓘ Next Required ✓ Accept ✗ Cancel

Epic smart phrase

	2/2/2026	1/26/2026	1/24/2026	1/23/2026
HOME SPIROMETRY				
FEV1	1.7 liters	1.42 liters	1.52 liters 1.32 liters	1.41 liters
FVC	2.29 liters	2.09 liters	2.26 liters 1.9 liters	2.06 liters
FEV1/FVC	0.74	0.68	0.67 0.69	0.68
FEV1 Baseline	1.81 liters	1.81 liters	1.81 liters 1.81 liters	1.81 liters

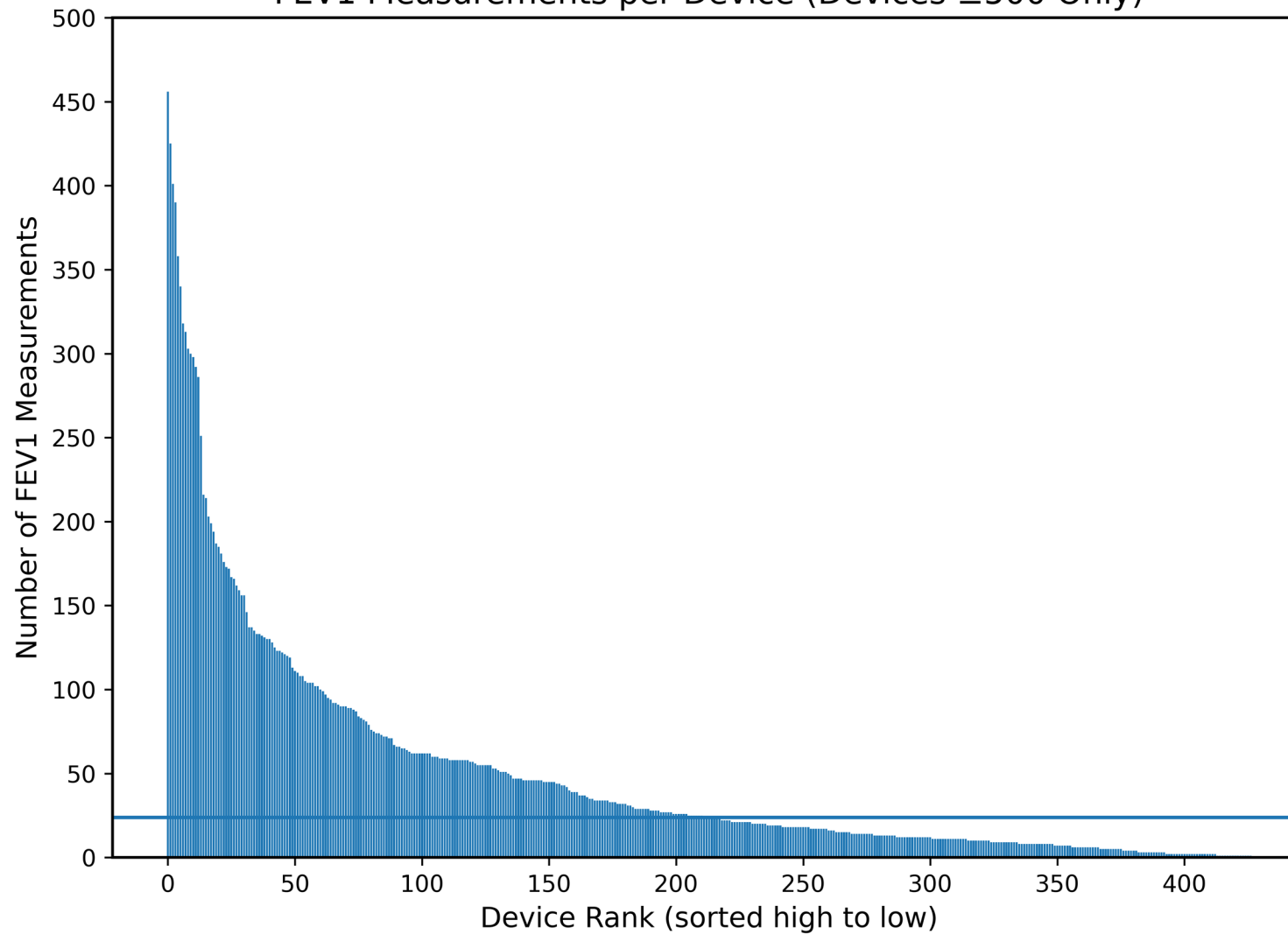
Multiple values from one day are sorted in reverse-chronological order

.homes|

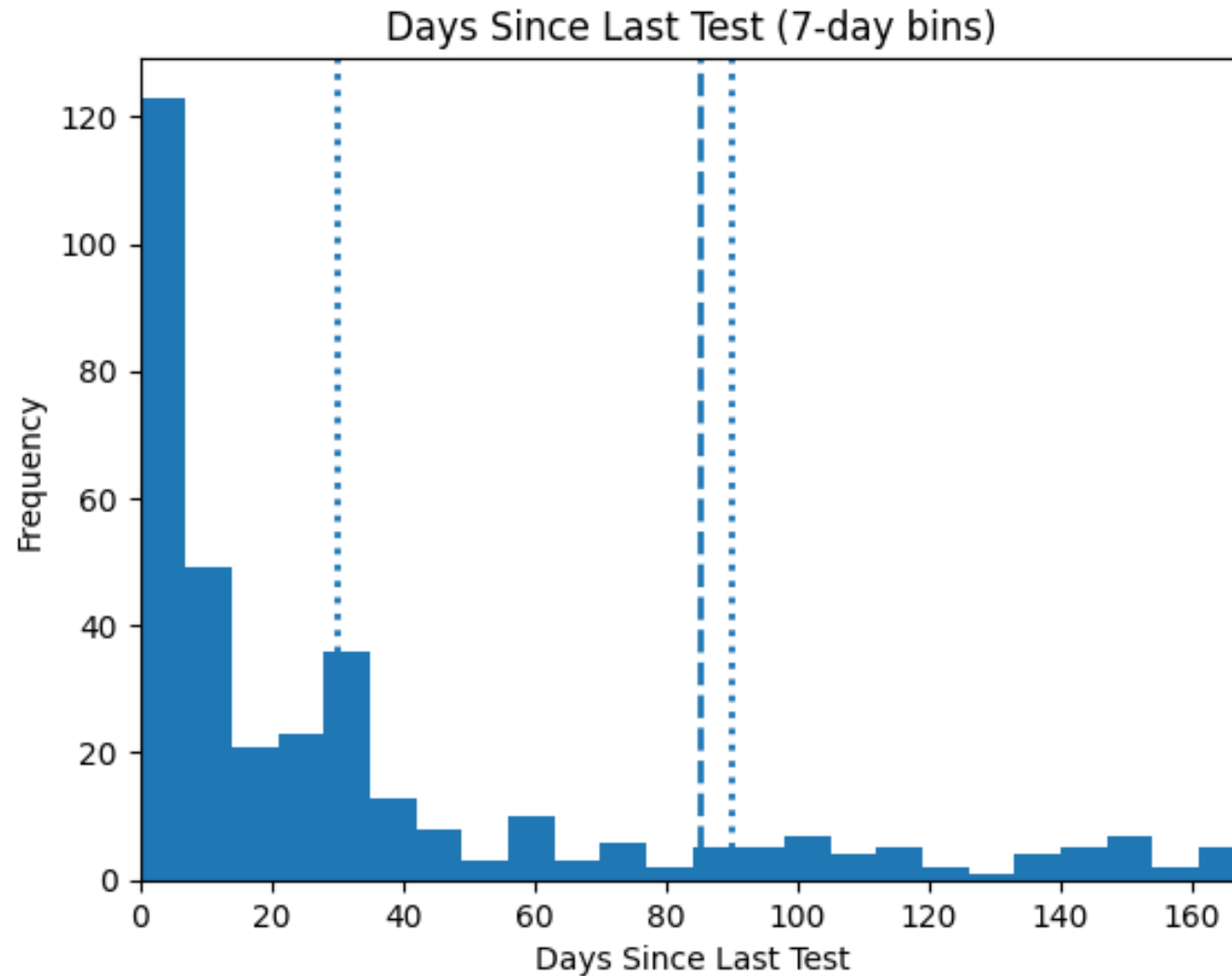
Name	Description
☆ HOMESPIROMETRY	HOMESPIROMETRY

Home Spirometry Use Across the Population

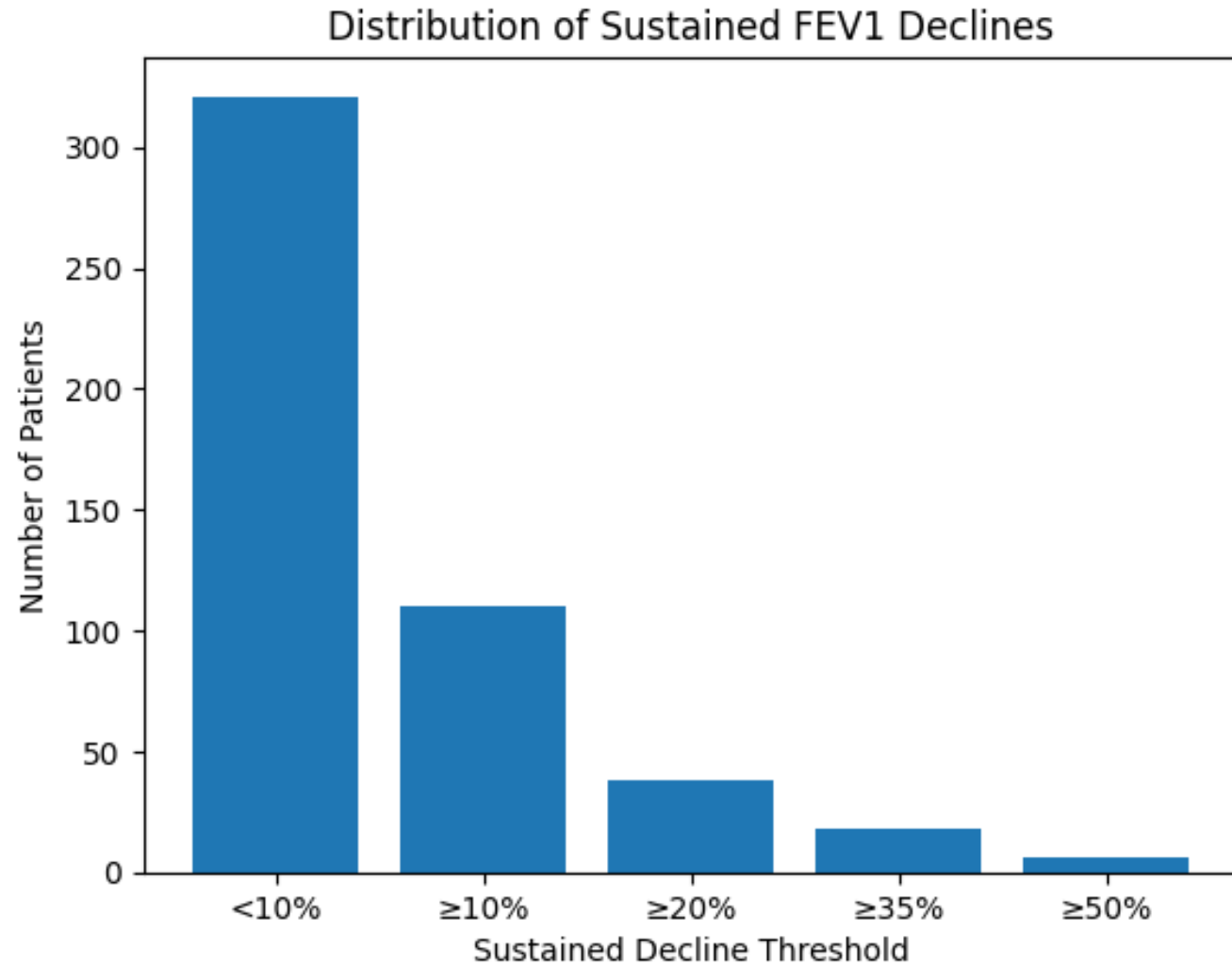
FEV1 Measurements per Device (Devices ≤ 500 Only)



Home Spirometry Frequency of Use



Can home spirometry identify BOS? Is BOS identified sooner?



Spirometry Reports

Pulmonary Function Test Report

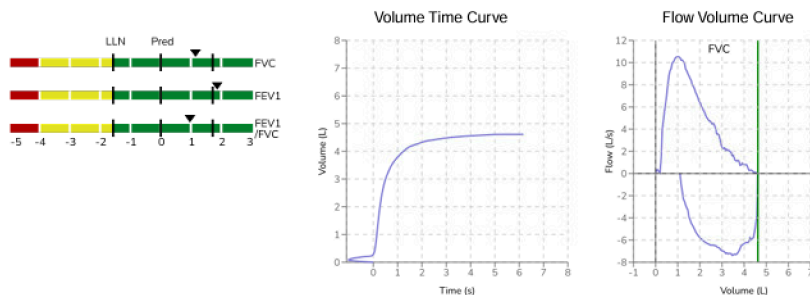


Period Date Range: 12/22/2025 - 01/20/2026

Device MIR Spirobank Smart spirometer

Patient	James M Abercrombie	Referred By	UCSF Lung Transplant
Spirometer ID	SM-005-Z030246	Provider	ZEPHYRx API
MRN	49642636	Date of Best Test	01/07/2026, 6:37 am
Birth	11/14/1954	Weight	220.00lbs, 99.79kg
Ethnicity	Caucasian	BMI	33.45
Remote Visit	No	Height	68.00in, 172.72 cm
		Sex at Birth	Male
		Given By	
		Call Duration	

Best Test: 01/07/2026, 6:37 am	LLN	Z Score	Pred. (L)	%Pred.	
FVC (L)	4.62	2.90	1.11	3.92	118%
FEV1 (L)	3.84	2.14	1.83	2.98	129%
FEV1/FVC	0.83	0.63	0.93	0.76	109%
FET (s)	5.36				
PEF (L/s)	12.06	5.61	3.21	7.80	155%
PIF (L/s)	7.38				
FEF-2575 (L/s)	4.11	0.98	1.63	2.28	180%
FEV6 (L)	4.62				
FIVC (L)	3.65				
BEV (L)	0.28				



Test Quality: FEV1 Grade: F; FVC Grade: F; Acceptable: Not acceptable or usable; FVC Repeatable: No; FEV1 Rep Variability: FEV1: 0.02L (0.52%); FVC: 0.04L (0.87%);

Epic Hyperspace – LUNG TR PARN POST 5 – U

Patient Station Encounter Voalte Chart

Abbott, Mary

In Basket Home Refresh New M

My Messages

Misc. Incomplete Work 1/1

Home Spiro 30-Day Reports 390/473

Attached & Covering Users 364/748

Home spirometry smart set

Plan

Reason for Visit Meds & Orders UCSF MyChart Msg MyChart Appt Request SmartSets Prep for Procedure Visit Diagnoses Problem List Goals Review A

Patient Hx

Associate Edit Multiple Patient Estimate Providers Research Association

Walgreens Specialty Pharmacy (Community) #21141 - PALO ALTO, CA - 217 ALMA ST AT NEC
650-326-3876 Remove Pend Sign

TX Spirometry Impression Manage User Versions

Group

Order Options

- Lung Transplant Follow-up
- Lung transplant status (CMS code) [Z94.2]
- Home Spirometry
 - Routine, Clinic Performed
- Home Spirometry Patient Instructions
- Normal Result
- Restriction Result
- Obstruction Result
- PR OFFICE/OUTPT VISIT,PROCEDURE ONLY [99999]

Additional SmartSet Orders

Search for additional SmartSet orders

Associate Edit Multiple Patient Estimate Providers Research Association

Walgreens Specialty Pharmacy (Community) #21141 - PALO ALTO, CA - 217 ALMA ST AT NEC
650-326-3876 Remove Pend Sign

Prep for Procedure & Surgical E-Consents

Access Prep for Procedure and Surgical E-Consents

Plan

Reason for Visit Meds & Orders UCSF MyChart Msg MyChart Appt Request SmartSets Prep for Procedure Visit Diagnoses Problem List

Patient Hx

SmartSets

Search for new SmartSet + Add

SmartSets

Suggestions

- Health Maintenance Orders and Diagnoses
- Medicare AWW SmartSet

Favorites

- IP Adult Core Admission Orders
- IP/AMB Adult Bronchoscopy Orders
- Lung Pre-Transplant (Evaluation)
- Post-Lung Transplant
- RAD Adult Post Procedure Orders
- TX Spirometry Impression

Open SmartSets

Prep for Procedure & Surgical E-Consents

Access Prep for Procedure and Surgical E-Consents

Visit Diagnoses

Search for diagnosis + Add

Common:	Lung transplanted (C...	Immunosuppressed ...	Lung transplant com...	Therapeutic drug mo...	Chronic lung allograf...
Previous:	Status post lung tran...	Lung transplant statu...	Lung transplanted (C...	Lung replaced by tra...	Lung transplant infec...
	Overweight	Stage 3b chronic kid...	Immunosuppression	Immunosuppressed ...	Therapeutic drug mo...
	Coronary artery dise...	More...			
Problems:	CAD (coronary arter...	CMV (cytomegalovir...	COVID-19	Donor specific antibo...	Elevated PSA
	Erectile dysfunction	Goals of care, couns...	Immunosuppression	Leg swelling	Long-term use of im...
	Lung transplant statu...	More...			

Checklist Review Notes

+ Create Note LTX POST 1 LTX PRE 2 LTX PRE FU 3

My Note

Note Details

Service: _____

Cosign Required?

★ Arial 11 B I U ☰ ↶ ? +

Insert SmartText [icon] → [icon] ↻ [icon] [icon]

Home Spirometry Interpretation
 Date of Service: 3/1/2026
 Report Month: January 2026

The flow volume loop appears normal.
 The FEV1 and FVC are normal.
 The lung function is stable.
 No evidence of chronic lung allograft dysfunction.

Home spirometry interpretation

Chart Re... Synopsis Rooming Plan Wrap-Up Communic... Enter Result ...

Wrap-Up

Med Sched Pt Education Videos Send Pt Message UCSF MyChart Appt Request Coding and Note Template Guide

Patient Instructions Follow-up Patient Understanding Social Drivers FindHelp LOS Charge Capture

Patient Instructions

Attach reference + Add Clinical References

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Great job with your home spirometry. Your lung function is stable.

Thank you for partnering with your care team by regularly submitting your home spirometry readings. This document summarizes your provider's review of your recent home spirometry results. It is listed as an office visit in our electronic health system, but since this is not a visit with you, you will not get charged. Your provider reviews your home spirometry readings at least once a month to monitor your progress and provide quality care. If your provider has immediate concerns about your health, they will reach out directly.

Patient Feedback

I think the purpose is to monitor our lung function from a distance and for the doctors to be able to get more frequent measurements of our FEV1 without having us come in to do spirometry, or even go into our local hospital. It's kind of a way to keep tabs on us from home in a way that's safe for us and easier for them.

I think it's pretty great. I found it really helpful. And it's been nice for me to have like a reason to do my FEV1 and have a record of that. I like having more of a stand-up baseline that has more frequent measurements because I've always in clinic other than when I've been sick, it's been really stable, but it's nice to know at home like, oh yeah, this is really kind of where [my condition] lives.

Participant 5

What's Next...

- Seamless onboarding
- Data integration into the EMR
- Alerting / Task system
- Dashboard
- Reporting / Billing
- Does home spirometry lead to better long short and term outcomes?
- How do we improve adherence?
- Can physiologic measurement be combined with other home measurements (biomarkers) to move to quality remote care

Transplant Care in the Future

Follow up clinic at intervals based on personalized needs

Home lab testing at intervals based on personalized needs

Surveillance testing?
Biomarkers, at home physiologic monitoring



Personalized
Immunosuppression
AI/Pharmacogenomics

Personalized Prophylaxis?
AI/Genomics

For cause testing based on
home testing / home
monitoring



Questions?