Implementation of an Intensive Pre-Operative Tobacco Cessation Program: Successes and Failures

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Disclosure Statement

- I do not have any financial interests in the topic of this talk
- I do not intend to discuss off-label or investigational use(s) of a product or device.
- I attest that I am not receiving direct payments from a commercial entity with respect to this activity.

Learning Objective

- At the end of this session, the participant will be able to describe the use of technology in improving lung cancer screening care delivered in rural communities

Background

- ~14% of adults in the US smoke cigarettes
  - 34.3 Million Smokers
    - 68% interested in quitting
    - 30% use evidence-based methods to quit
    - 7% are successful
- Rates of smoking are highest among
  - Men (16%)
  - Age 25-64 (16%)
  - Native Americans (24%)
  - Lower Education Levels (23-37%)
  - Lower Annual Household Income (21% if <$35K)
  - Live in the Midwest (17%) or South (16%)
  - Uninsured (25%) or on Medicaid (25%)
  - Serious Psychological Distress (35%)

https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm

Centers for Disease Control and Prevention. Quitting Smoking Among Adults – United States, 2000-2015. Morbidity and Mortality Weekly Report 2017;65(52);1457-1464

Background

- Smoking
  - 30% of all Cancer-Related Deaths
  - 80% of Lung Cancer-Related Deaths
- Early Stage Non-Small Cell Lung Cancer
  - Estimated 5-yr Survival for a 65y/o
    - 70% if quit smoking
    - 33% if continue to smoke
- Current smoking at the time of operation is an independent risk-factor for recurrence, metastasis and increased mortality.

-Parsons et al. Influence of smoking cessation after diagnosis of early stage lung cancer on prognosis: systematic review of observational studies with meta-analysis. BMJ 2010
-Nia et al. Prognostic value of smoking status in operated non-small cell lung cancer. Lung Cancer 2005

Background

- Vision of our Tobacco Cessation Program
  - Easy to access
  - Expert Trained
  - Full Service
  - Point of Care
  - Utilize evidence based approaches
  - Use existing staff
  - Provide free nicotine replacement therapy
  - Combine with other counseling services
    - Social Work
    - Nurse Navigation
  - Attempt to make it an opt OUT model

Background

- Starting Point
  - Betsy Maislen
    - Single provider in the outpatient setting
    - Multiple other jobs
    - Dynamo
  - Koop Institute
    - Resources
    - Experience
    - Research horsepower

Background

- Starting Point
  - CTOP
    - Comprehensive Thoracic Oncology Program
    - Dedication Physicians
    - Motivated Staff
  - 1-800-QUITWORKS
  - Direct Communication to the State Dept of Health
    - Nicotine Replacement Therapy – Free!
  - CO monitoring equipment
- Everyone believed that Tobacco Cessation is a Priority

Background

- Starting Point
- Institutional Interest, but…
  - No physical space
  - No money
  - No extra time
  - No new hires
  - No administrative support

Intensive, Pre-Operative Tobacco Cessation Program

- Do what you can with what you have
- Combined Support
  - Surgeons
  - Medical Oncologists
  - Radiation Oncologists
  - Certified Tobacco Treatment Specialists
    - APRN
  - Nursing
  - MA/LNA intake staff

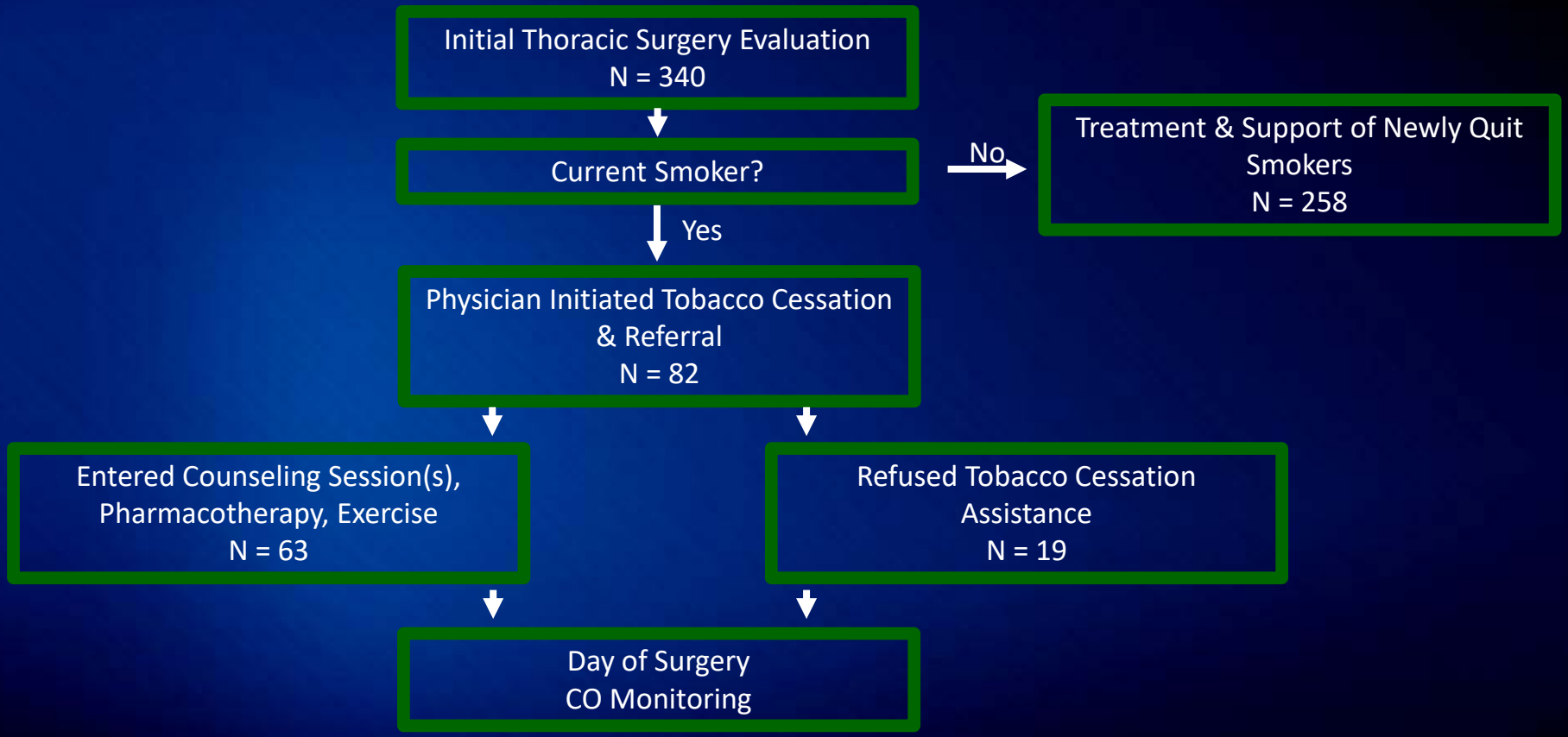
Intensive, Pre-Operative Tobacco Cessation Program

- Identification of Current Smokers
  - Definition of smoking
    - Current
    - Former
    - Never
  - Definition of amount of smoking
    - Average pack years
    - Amount currently
  - Defining all smoking types
    - Vaping, e-cigarettes
    - Marijuana
    - Others

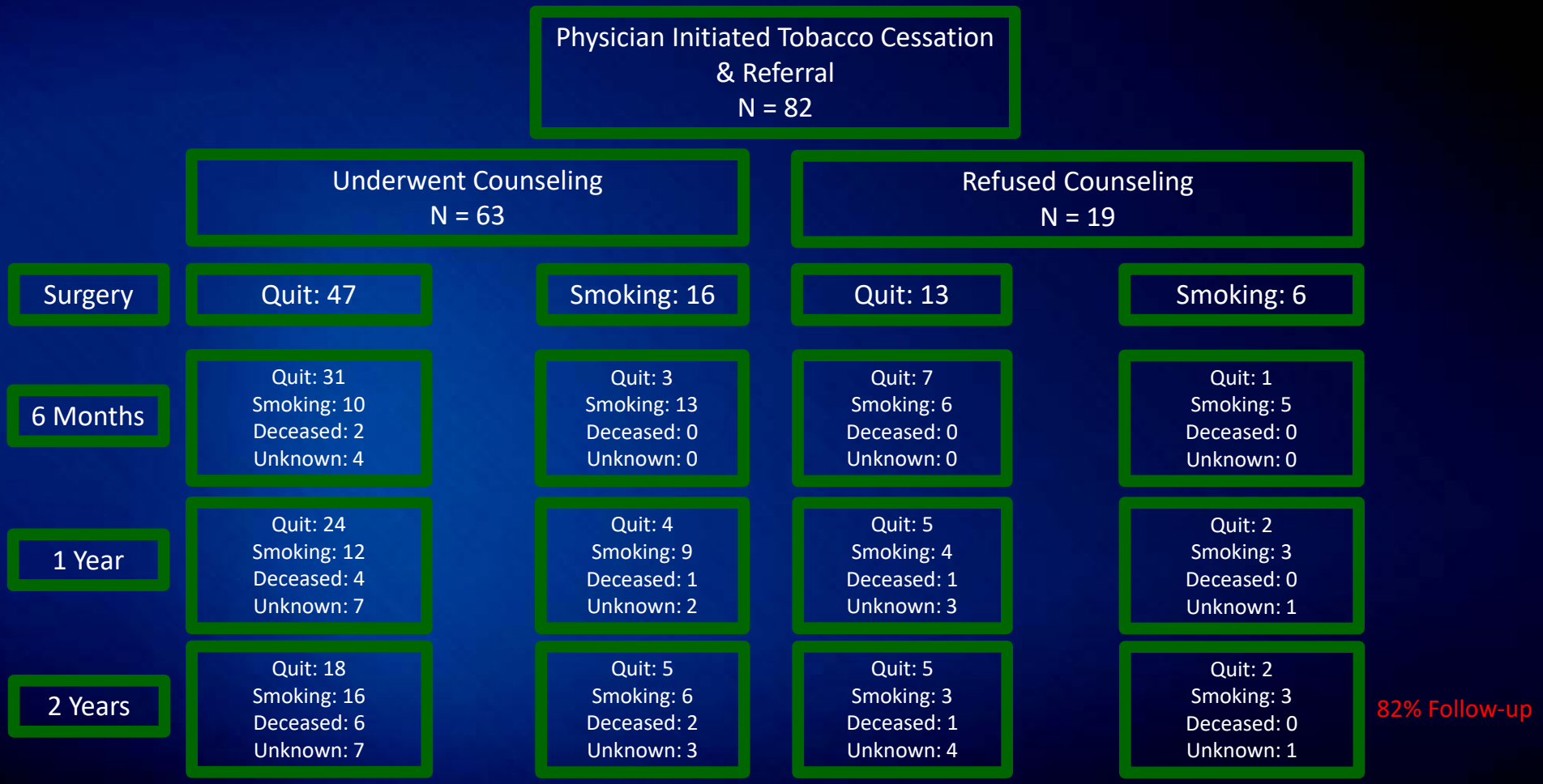
Intensive, Pre-Operative Tobacco Cessation Program

- Cessation Counseling
  - At least a 1-hr face-to-face meeting
    - Motivational Interviewing
    - Discussion of Options
    - At time of their initial visit
  - Patient Autonomy
    - Nicotine Replacement
    - Bupropion
    - Varenicline
    - None
  - Set a Quit Date
  - CO Testing
- Follow-up As Needed (Face-to-Face/Telephone)

Lung Resections: Jan 1, 2015 to June 30, 2017



Characteristic		Current Smokers n=82
Demographics	Male	51.20%
	Race - Caucasian	98.80%
	Average age ± SD	62.3 ± 7.1
	Pack years ± SD	50.6 ± 26
Pulmonary Co-Morbidities		
	COPD	46.40%
	Asthma	4.80%
	Pulmonary Hypertension	2.40%
	Current Oxygen Use	2.40%
	None	45.20%
Other Co-Morbidities		
	Hypertension	33.30%
	Coronary Artery Disease	16.70%
	Peripheral Vascular Disease	10.70%
	Mood Disorder	19%
	Anxiety Disorder	17%
Pulmonary Function		
	FEV1 % ± SD	71.7 ± 18.6
	FEV1 ± SD	2.02 ± 0.6
	FVC % ± SD	86.8 ± 16.2
	FVC ± SD	3.3 ± 0.9
	DLCO (%) ± SD	72.8 ± 16.7
Treatment		
	Wedge	16.70%
	Lobectomy	82.10%
	Pneumonectomy	1.20%
Pathologic Stage		
	IA	32.10%
	IB	27.40%
	IIA	5.90%
	IIB	5.90%
	IIIA	8.30%
	IIIB	2.40%
	IV	4.80%
	Benign	9.50%
	Metastatic from a separate origin	2.40%


Physician Initiated Tobacco Cessation & Referral
N = 82
Underwent Counseling
N = 63
Refused Counseling
N = 19
Surgery
Quit: 47
Smoking: 16
Quit: 13
Smoking: 6
6 Months
Quit: 31
Smoking: 10
Deceased: 2
Unknown: 4
Quit: 3
Smoking: 13
Deceased: 0
Unknown: 0
Quit: 7
Smoking: 6
Deceased: 0
Unknown: 0
Quit: 1
Smoking: 5
Deceased: 0
Unknown: 0
1 Year
Quit: 24
Smoking: 12
Deceased: 4
Unknown: 7
Quit: 4
Smoking: 9
Deceased: 1
Unknown: 2
Quit: 5
Smoking: 4
Deceased: 1
Unknown: 3
Quit: 2
Smoking: 3
Deceased: 0
Unknown: 1
2 Years
Quit: 18
Smoking: 16
Deceased: 6
Unknown: 7
Quit: 5
Smoking: 6
Deceased: 2
Unknown: 3
Quit: 5
Smoking: 3
Deceased: 1
Unknown: 4
Quit: 2
Smoking: 3
Deceased: 0
Unknown: 1
82% Follow-up

Successful Tobacco Cessation

	Entered Counseling Session(s), Pharmacotherapy, Exercise N = 63	Refused Tobacco Cessation Assistance N = 19
Surgery	75%	68%
6 Months	55%	42%
1 Year	48%	39%
2 Years	42%	33%

Excluding confirmed deaths and assuming those without follow-up were smoking

Successful Tobacco Cessation

	Entered Counseling Session(s), Pharmacotherapy, Exercise N = 63	Refused Tobacco Cessation Assistance N = 19
Surgery	75%	68%
6 Months	62%	42%
1 Year	60%	50%
2 Years	55%	56%

Excluding confirmed deaths and assuming those without follow-up remained at last known status

Successful Tobacco Cessation

	Quit by Surgery N = 60	Smoking at Surgery N = 22	
6 Months	66%	18%	$p < 0.001$
1 Year	53%	29%	$p = 0.06$
2 Years	43%	35%	$p = 0.73$

Excluding confirmed deaths and assuming those without follow-up were smoking

Successful Tobacco Cessation

	Quit by Surgery N = 60	Smoking at Surgery N = 22	
6 Months	72%	18%	$p < 0.0001$
1 Year	69%	29%	$p < 0.01$
2 Years	62%	35%	$p < 0.05$

Excluding confirmed deaths and assuming those without follow-up remained at last known status

Successful Tobacco Cessation: Conclusions

- Trend toward improved quit rates by the time of surgery for those who entered into a Tobacco Cessation Program
  - Statistical significance limited by small sample size (63 vs 19)
  - Having surgery cancelled if still smoking is a motivator
  - Only 2 patients refused to quit and chose alternative therapy
  - CO monitoring identifies patients who are not truthful
    - “I thought you were like the other doctors. But when you said you wanted me to quit, you really meant it”
      - Cancelled 3 surgeries and rescheduled and all passed CO test
  - Most patients were thankful that they were required to quit

Successful Tobacco Cessation: Conclusions

- Patients who “opt-in” to an intensive program may need more assistance to quit than those who “opt-out”
  - If you felt you needed help you most likely did
  - Many had made decision to quit before they came to clinic
- Trend toward improved rates of remaining smoke-free up to 2 years after surgery for those who entered into a Tobacco Cessation Program and those able to quit prior to surgery
  - Hard to predict who will remain smoke free
  - Recidivism expected
    - But higher relapse rate then expected

Intensive, Pre-Operative Tobacco Cessation Program

- What worked?
  - Utilizing the staff that you already have
  - Engaging all stakeholders
    - People
    - Institution
    - State Resources
    - National Resources
  - Believing in what you do will help
    - Motivating others to beat the drum with you
    - Never giving up or slowing down
    - Making things absolute

Intensive, Pre-Operative Tobacco Cessation Program

- What worked?
  - Data, Data, Data
    - Personal
      - 50% reduction in survival if you continue to smoke
      - Cost savings
      - Other health benefits
    - Institutional
      - Reduced operative complications
      - Reduced re-admissions
      - Improved survival
    - The more that you bring this information to the forefront, the higher the likelihood of getting institution support for programs

Intensive, Pre-Operative Tobacco Cessation Program

- What didn't work?
  - Opt in doesn't work very well
    - We are moving to an opt out model
    - All patients will see tobacco treatment specialist
      - They can refuse meeting once they talk to them
      - No charge if they refuse
      - Will need to eval success/failure of this model
  - Some surgeons were not absolute
    - Higher rate of smoking at time of surgery
    - Higher rate of relapse after surgery
    - Increased severity of complications
      - Rate is about the same, grade is much higher

Intensive, Pre-Operative Tobacco Cessation Program

- What didn't work?
  - Long term viability of the program
    - Without commitment to funding, program will fail
    - Currently Thoracic Surgery supports most of the program
      - Alternate funding is a priority
      - It will never directly make money
  - Expecting everyone to be on board
    - Many feel it is not right to demand tobacco cessation of patients
      - 80% of physicians do NOT want to engage at time of diagnosis
      - 80% of patients DO want to be engaged
    - Need to do more education

Intensive, Pre-Operative Tobacco Cessation Program

- Future Direction
  - Alternate Funding Sources
    - P30 C3I grant
      - NCI funded tobacco cessation program
      - 2 years
      - $250,000
      - Requires an institutional commitment to the level during the grant for 3 additional years
        - One extra TTS
        - Infrastructure with salary support for coordinator
      - Data collection
      - Bi-annual meetings to share information among 42 sites

Intensive, Pre-Operative Tobacco Cessation Program

- Future Direction
  - Combining Programs
    - Addition of Tobacco Cessation Counseling to be offered with Lung Cancer Screening
      - During Shared Decision making it will be offered
      - Pairing the two may have increased success
    - Breast Cancer Screening
      - Referral at time of screening if active smoker
    - Vascular Surgery
      - Developing program to meet patients with TTS in Vascular Surgery clinic as part of their visit
    - Pre-op Exercise program
      - Exercising increases success of smoking cessation

uPEP -- Overview

A feasibility, single arm, single site study of unsupervised, pre-operative exercise program (uPEP) for patients scheduled for lung cancer surgery

Background:

- Surgery offers a potential cure for certain lung cancers, yet it is physiologically stressful and associated with considerable morbidity.
- The paradigm of pre-operative exercise as a neoadjuvant therapy to reduce morbidity is increasingly promoted within general surgery[1,2] and surgical oncology[3,4].
- Most pre-operative exercise studies have evaluated highly supervised exercise programs,[4,5] which are labor-intensive and unsustainable given the workforce shortages in oncology.[6]
- The main challenge to this T3 translation research[7] is to identify efficient ways to ensure that patients engage in the prescribed amount of preoperative exercise while at home and are receiving tailored feedback and support to allow them to safely sustain a given level of physical activity.
- Before we can develop an intervention in which patients receive tailored support similar to what occurs with supervised exercise, we need to pilot test the monitoring aspect of the wearable fitness device in conjunction with the pre-operative exercise program.

uPEP -- Aims

Objectives:

- To determine the feasibility and acceptability of the electronically-monitored uPEP for patients scheduled for lung cancer surgery.
- To assess the potential effectiveness of the electronically-monitored uPEP in enhancing participation in exercise, aerobic capacity, pulmonary function, and physical function.

uPEP -- Schema

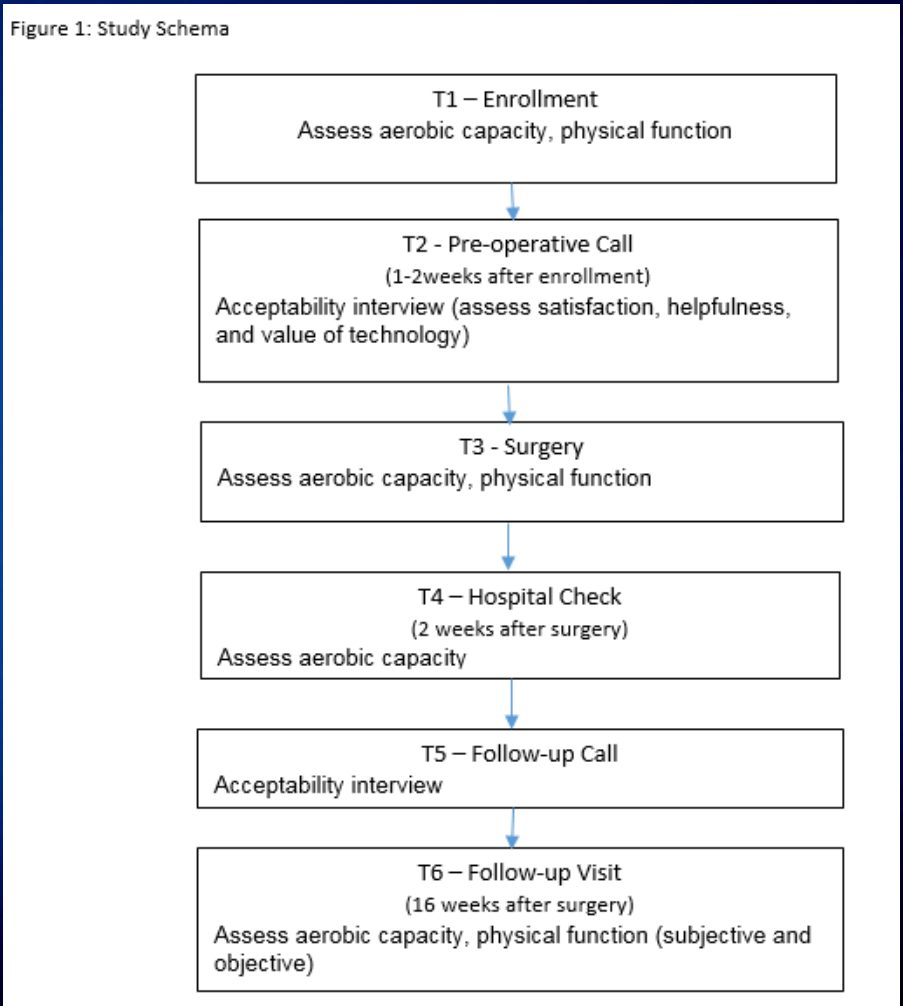
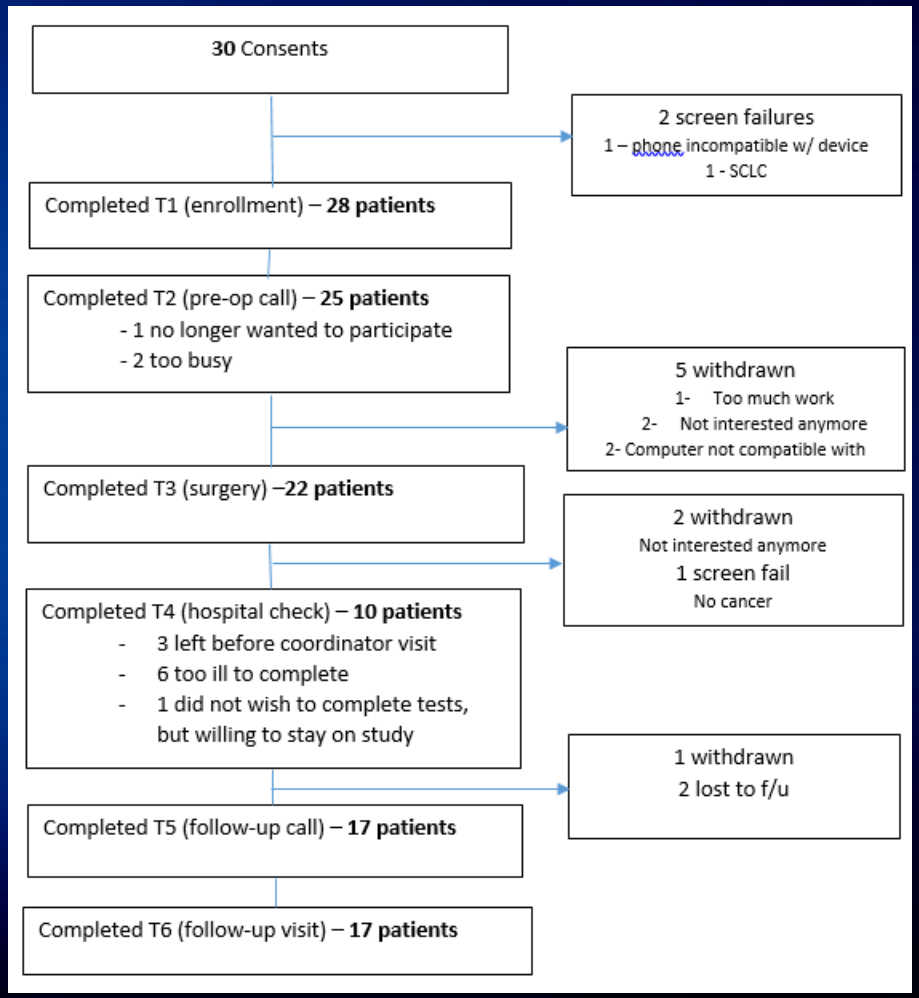


Figure 1: Study Schema
T1 – Enrollment
Assess aerobic capacity, physical function
T2 - Pre-operative Call
(1-2weeks after enrollment)
Acceptability interview (assess satisfaction, helpfulness, and value of technology)
T3 - Surgery
Assess aerobic capacity, physical function
T4 – Hospital Check
(2 weeks after surgery)
Assess aerobic capacity
T5 – Follow-up Call
Acceptability interview
T6 – Follow-up Visit
(16 weeks after surgery)
Assess aerobic capacity, physical function (subjective and objective)

uPEP -- Results



uPEP -- Results

- Of the 28 enrolled, 20 participants logged at least 1 device day pre-operatively
  - Average Pre-Operative Days
    - 30.4 (32)
  - Average Device Days
    - 23.5 (25.2)
  - Average Percentage of Pre-Operative Days Device Used
    - 84%

uPEP – Results

- What did we learn?
  - You either loved it or hated it
  - Many people didn't like being "watched"
  - It motivated more people then it turned people off to exercise
  - Provided quantitative data without requiring patients to travel
  - Is a platform to work from

Intensive, Pre-Operative Tobacco Cessation Program

- Patients are interested and ready to be an active participant in their health
- Most providers are interested in helping but may require
  - Education
  - Direction
  - Support
  - Encouragement
- Institutional support is slow
  - You really need to build the program and show that it works
  - Don’t get discourage
  - Find your champions
- Find External sources of funding

Questions?

CTOP Members

- Timothy Millington
- Joseph Phillips
- Rian Hasson
- Farhad Mazdisnian
- Kat Egressy
- Bill Black
- Candice Black
- Konstantin Dragnev
- Keisuke Shirai
- Greg Russo
- Nirav Kapadia
- David Finley
- Stu Gordon
- Tammy Moran
- Alex Fannin
- Alex Fuld
- Dagmar Hoegemann-Savellano
- Graham Atkins
- Laura Tafe
- Marc Seltzer
- Julian Czum
- Philip Schaner
- Tim Gardner
- Jonathan Dupuis
- Lisa Cotnoir

Robotic Lobectomy with Bronchoplasty