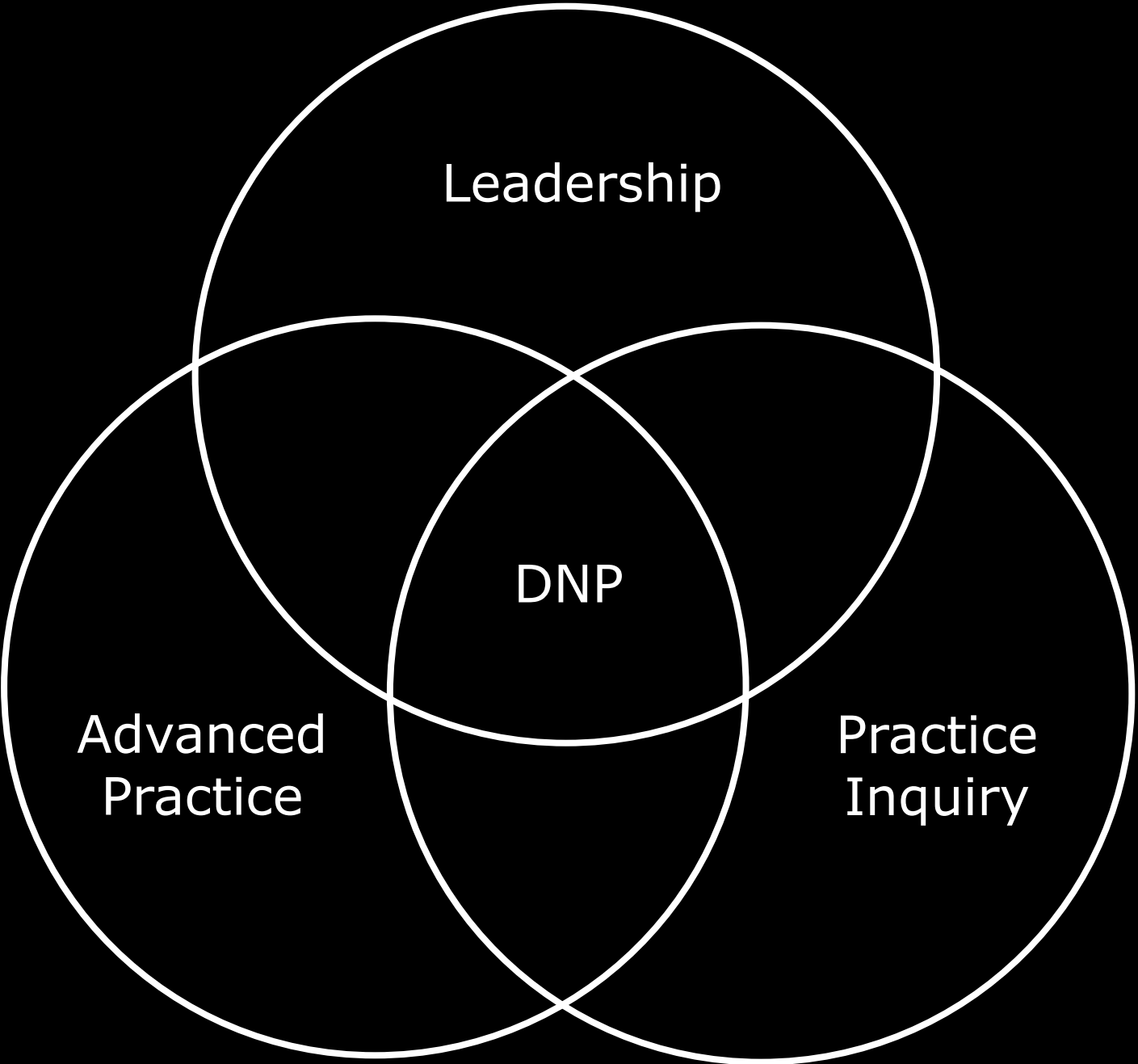


Oxygen Use at the End of Life

Lauren Smilde, ARNP, DNP

October 28, 2019

I have no conflicts of interest to disclose.



Leadership

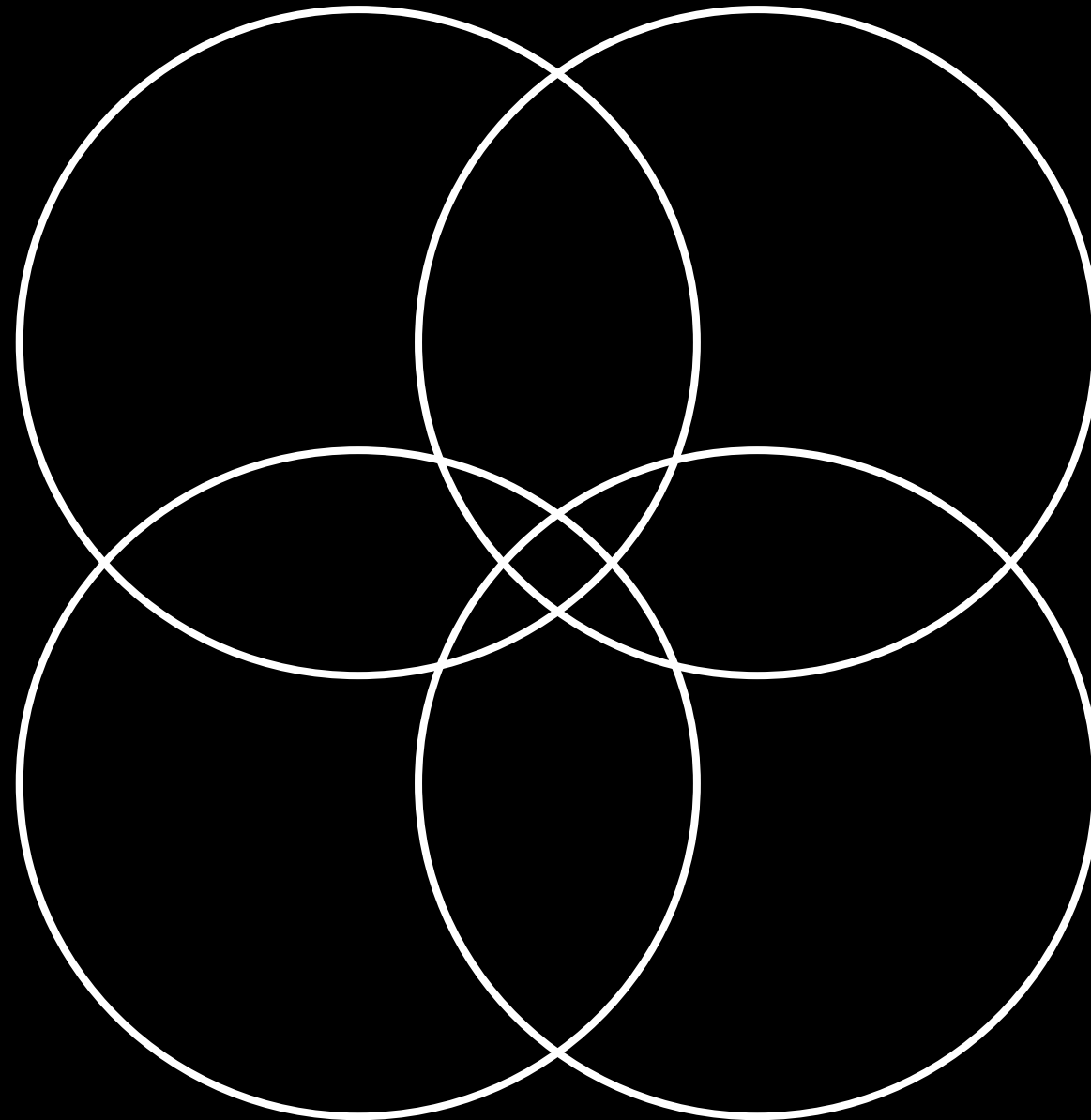
DNP

Advanced
Practice

Practice
Inquiry

17 years

Clinical state,
setting, and
circumstances



Patient's
preferences
and actions

Research
Evidence

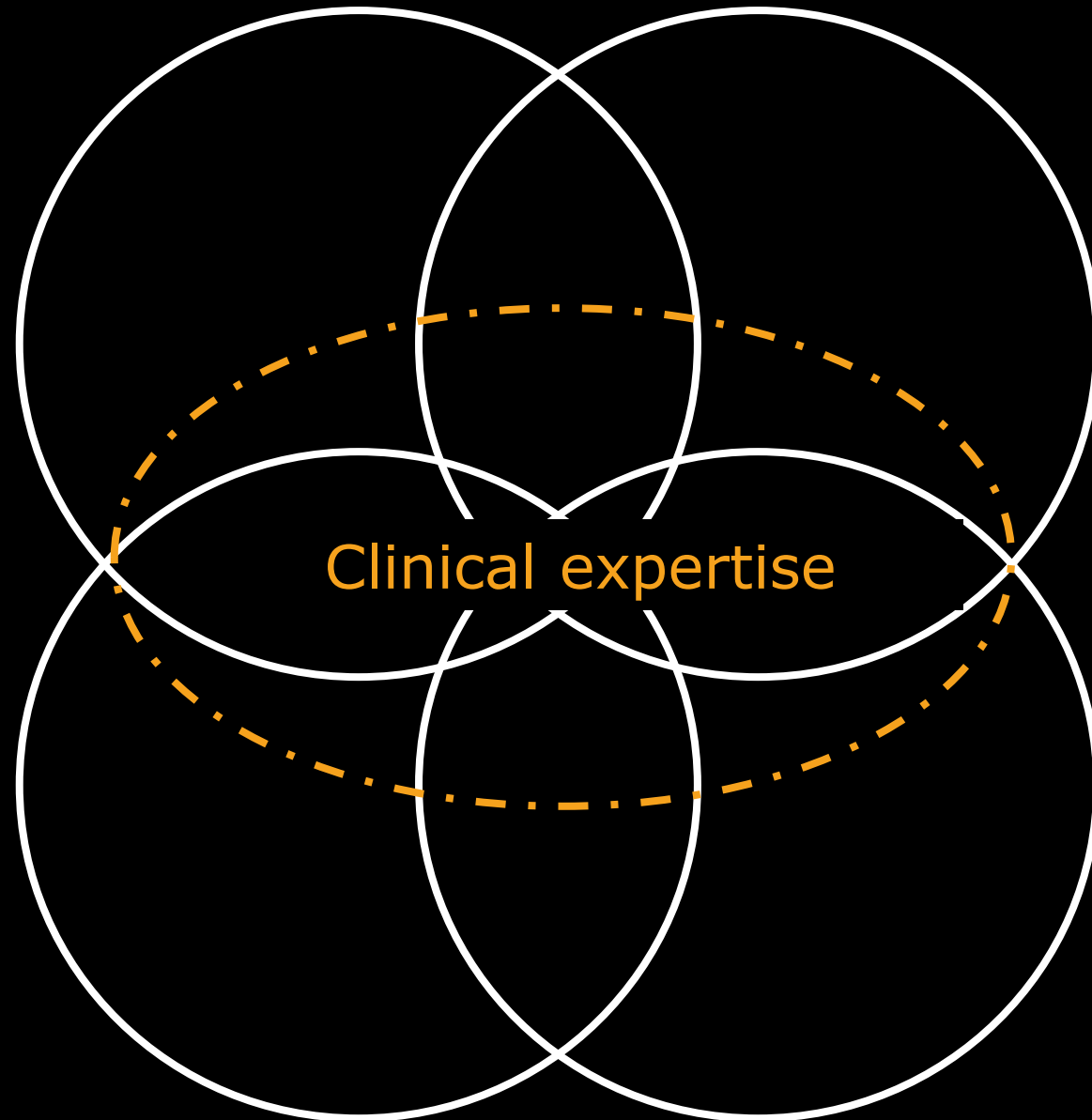
Health care
resources

Clinical state,
setting, and
circumstances

Patient's
preferences
and actions

Research
Evidence

Health care
resources



Clinical expertise

OBJECTIVES

- Summarize best practice for dyspnea at EOL
- Determine if your practice aligns with guidelines
- Describe how you can use a model to guide the implementation of evidence-based practice

BACKGROUND

Awareness

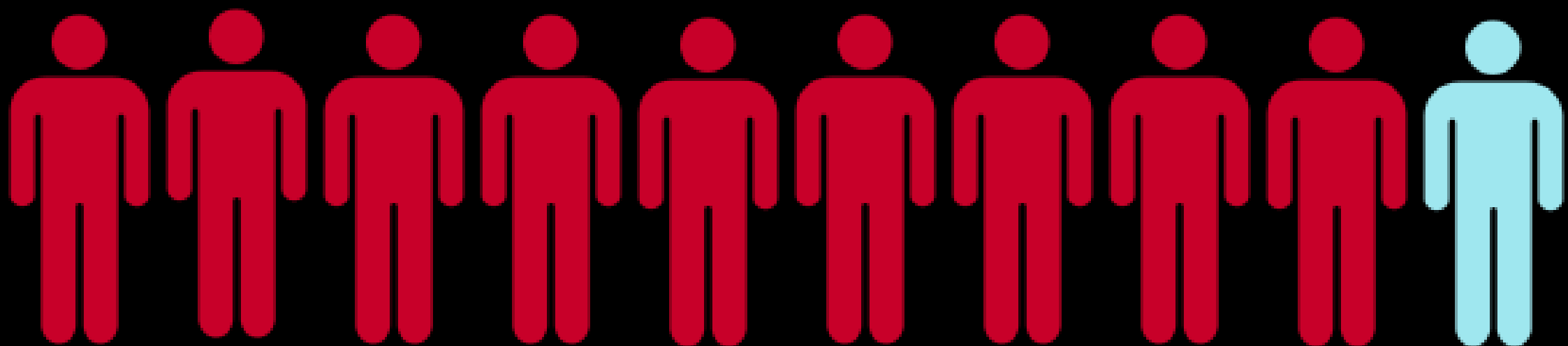
Tightness

Troubled breathing

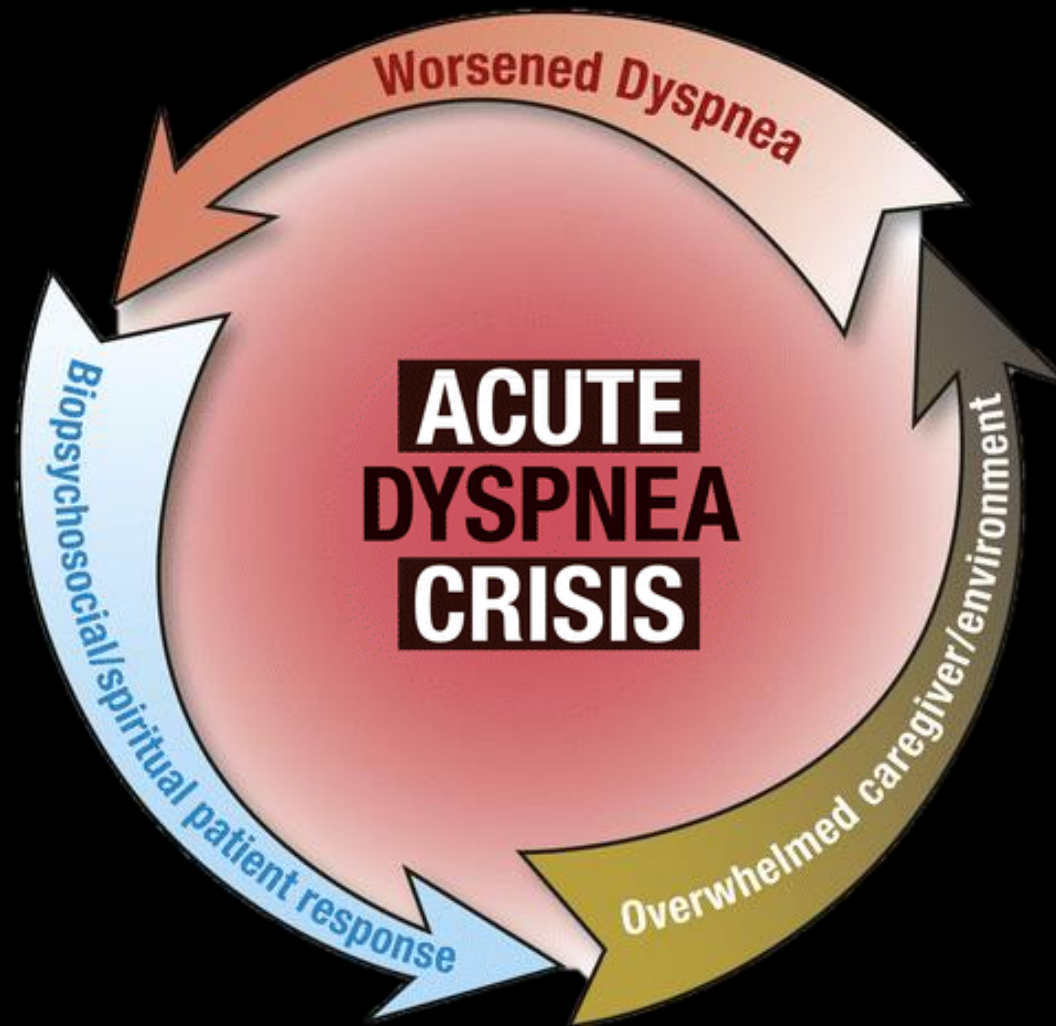
Air hunger

Suffocation





Solano, Gomes, Higginson (2006)



Parshall, Schwartzstein, Adams et al (2012)

What is one of the first things we offer when someone is having trouble breathing?





The purpose of this project was to:

- Evaluate the current use of oxygen
- Promote effective symptom management
- Encourage evidence-based practice
- Reduce cost, risk and burden



What is the evidence?



What is the current practice?



How do we make them align?



What is the evidence?



What is the current practice?



How do we make them align?

PubMed

oxygen AND dyspnea AND hospice

Create RSS Create alert Advanced

Article types

Format: Summary Sort by: Most Recent Per page: 20

Send to

10 Clinical Trials

Year	Sample Size	Diagnoses	Hypoxic?	RCT?	Results
1992	1	Cancer	All	No	O ₂ > air
1993	14	Cancer	All	No	O ₂ > air
1996	38	Mixed	6 (16%)	No	No difference*
2003	33	Cancer	None	No	No difference
2004	12	Cancer	None	No	No difference
2006	51	Cancer	17 (33%)	No	No difference*
2009	413	Mixed (93% Cancer)	Unknown	No	O ₂ did not improve dyspnea
2009	46	Cancer	18 (39%)	No	O ₂ did not improve dyspnea*
2010	239	Mixed	Several (<33%)	Yes	No difference*
2013	32	Mixed	Several (% unknown)	No	No observed benefit after adding O ₂ near death

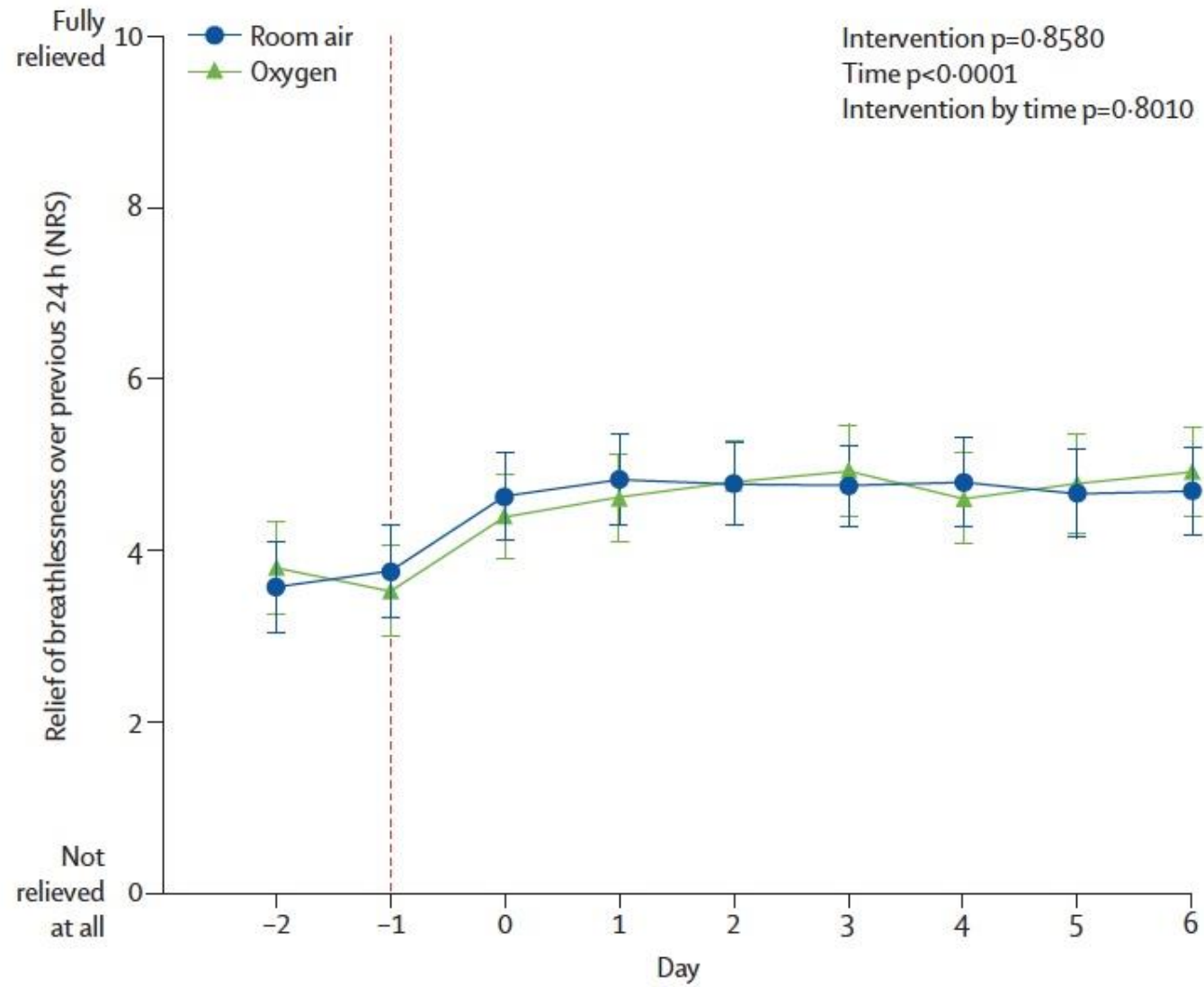
*Regardless of hypoxia at baseline



administered room air



administered oxygen



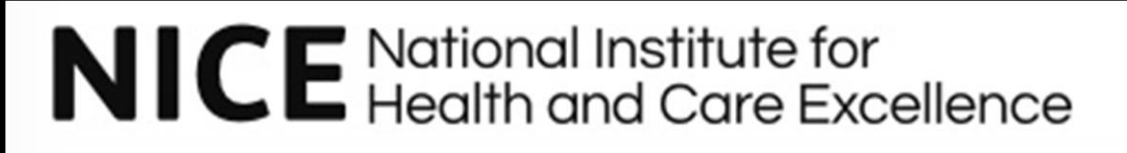
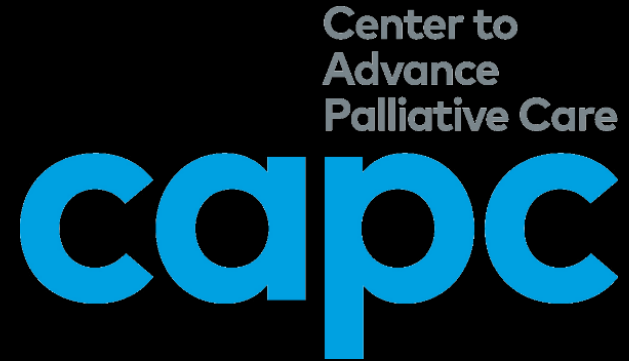
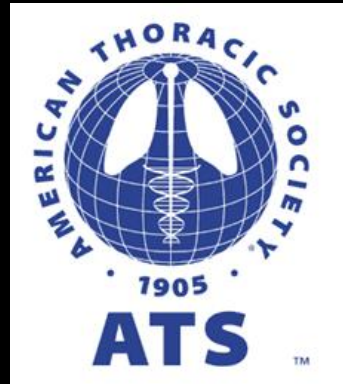
Abernethy et al (2010)

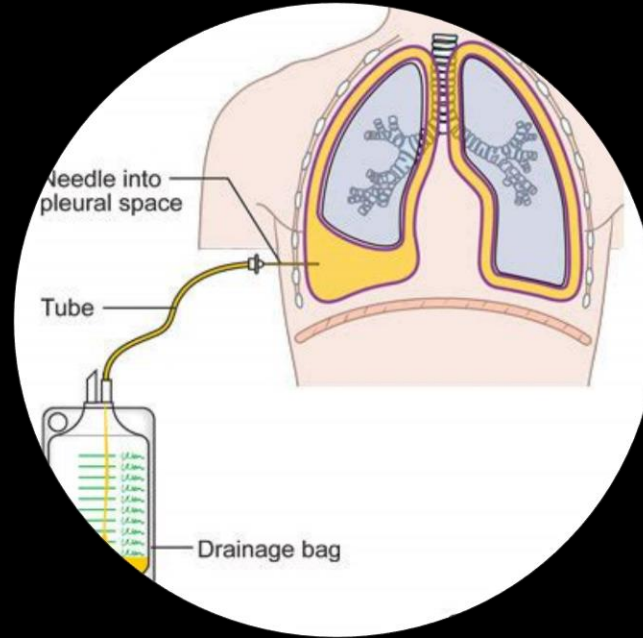
administered room air = administered oxygen*

* for patients not previously on long-term O₂ therapy

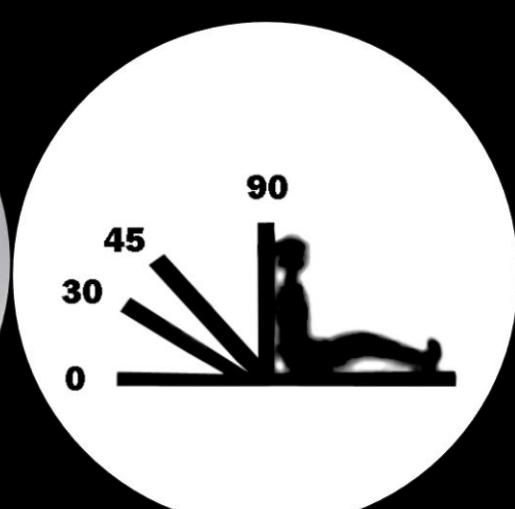


Wong et al (2017)





Identify and treat reversible causes.



Offer non-pharmacologic interventions.



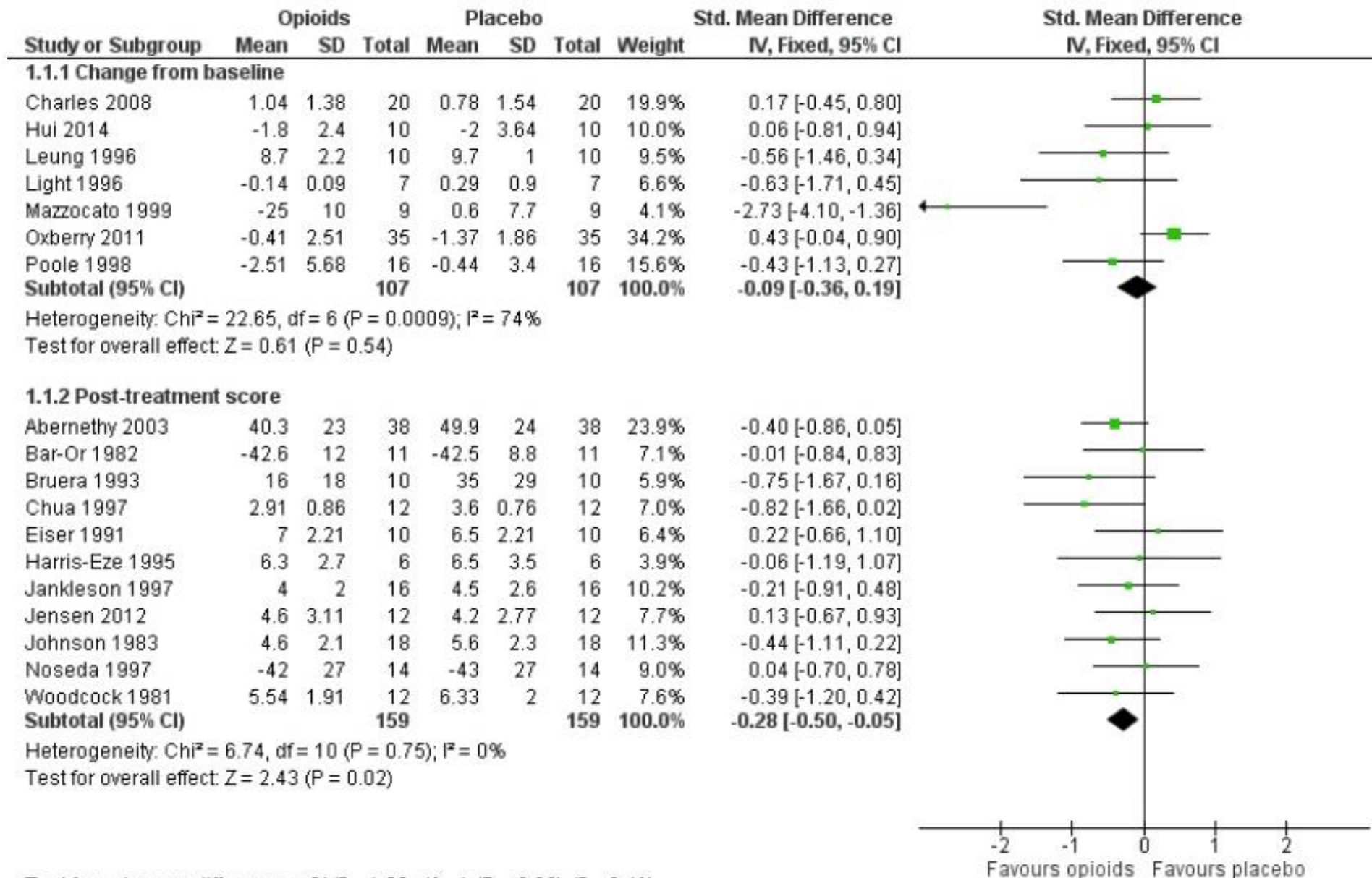
Oxygen is not recommended for routine use, even in the home care setting or in the last days of life.



Offer oxygen to those with known or clinically suspected symptomatic hypoxemia.



Offer pharmacologic interventions.
Opioids are first line treatment.



Test for subgroup differences: $\text{Chi}^2 = 1.09$, $\text{df} = 1$ ($P = 0.30$), $I^2 = 8.4\%$



What is the evidence?



What is the current practice?



How do we make them align?

Hospice General Order Set

DYSPNEA

Orders below may be used in combination with orders for anxiety, restlessness and/or agitation. Patient may receive agents in section A and/or section B.

A. Oxygen

a. If patient is short of breath:

i. Supplemental oxygen. 2-4 liters per minute. ...

B. Morphine

a. If patient is short of breath:

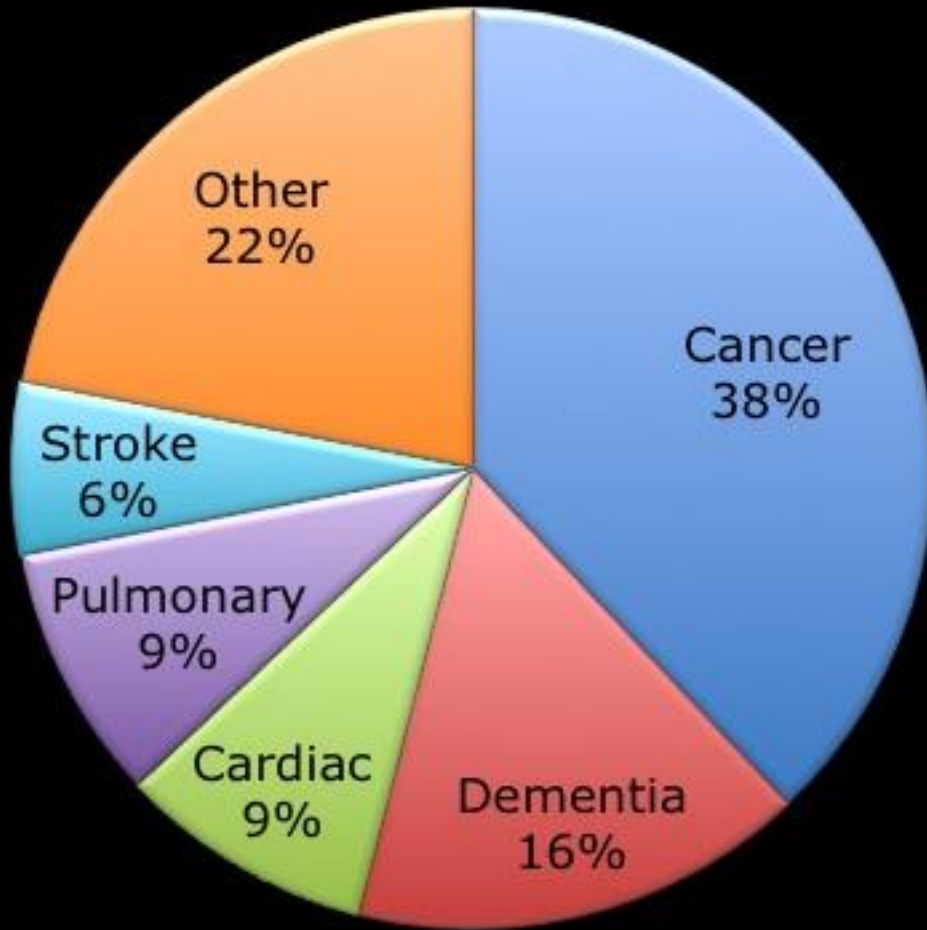
i. Morphine 20 mg/mL oral concentrate. ...

b. If patient...

c. If patient...

FEBRUARY 2018

				1	2	3
4	5	6	7	8	9	10
11	122 patients were admitted over a two week period.					



Length of Stay on Hospice

Average: 56 days

Median: 23 days

Range: 1-328 days

70%

received oxygen concentrators while on service

80%

of these orders were placed at the start of care,
regardless of diagnosis or symptoms

65%

had no documented dyspnea while on hospice

EVIDENCE-BASED GUIDELINES



EVIDENCE-BASED PRACTICE



49%

of home hospice patients who did not report dyspnea (n = 2542) received oxygen.

Shah, Homel, and Breznay (2016)

82%

of clinicians have put oxygen on a patient to “please a patient’s family member.”

Quinn-Lee, Weggel, and Moch (2018)

One third

of the palliative care physicians very frequently used oxygen therapy for cancer dyspnea in terminal cancer patients without hypoxemia.

This was a clear “evidence-practice gap.”

Watanabe H, Matsunuma R, Suzuki K et al. (2019)



What is the evidence?



What is the current practice?

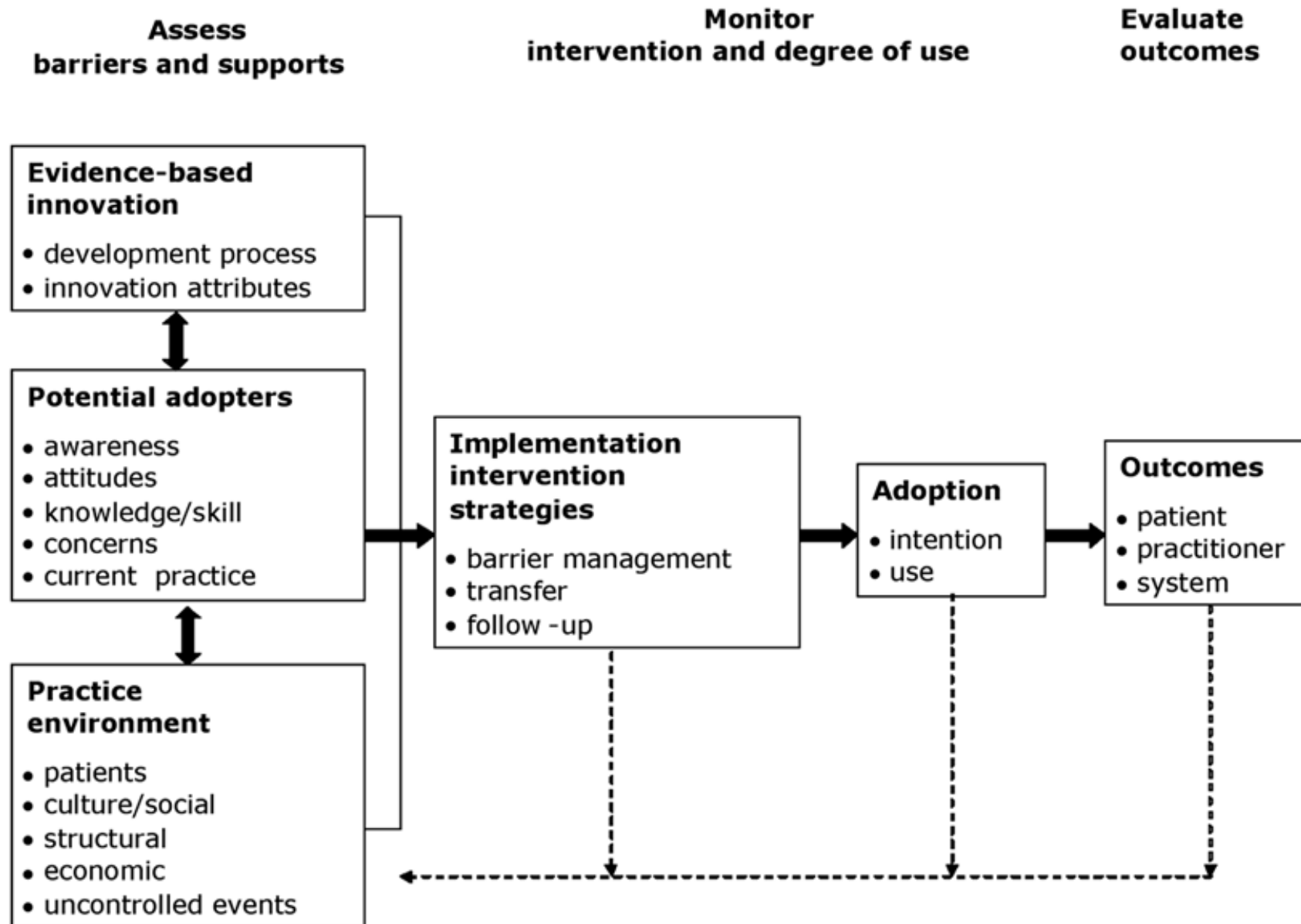


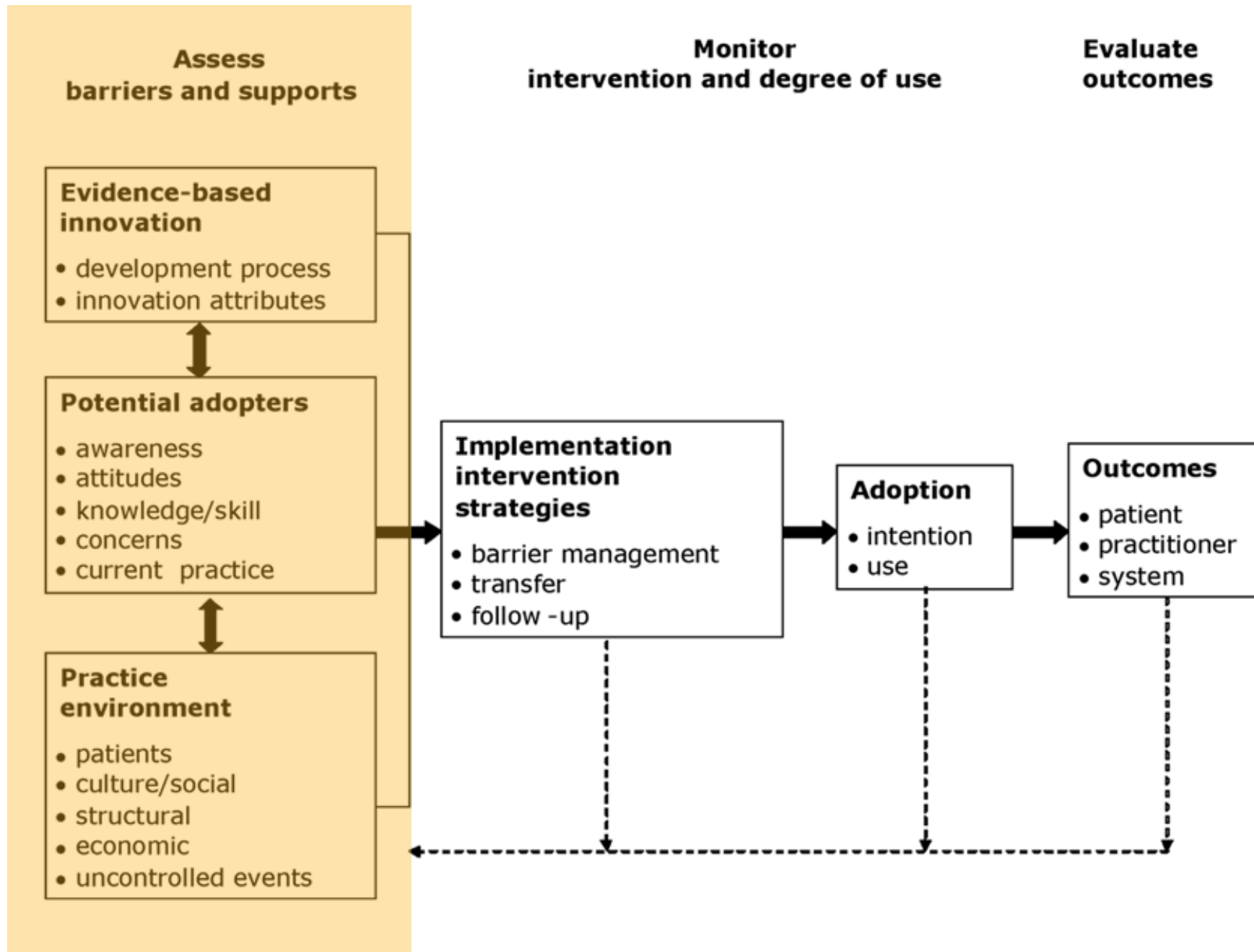
How do we make them align?

IMPLEMENTATION

- Translating Research into Practice (TRIP) Model
- The Ottawa Model of Research Use
- The Iowa Model
- Knowledge to Action (KTA) Framework

The list continues...





**Assess
barriers and supports**

**Evidence-based
innovation**

- development process
- innovation attributes



Potential adopters

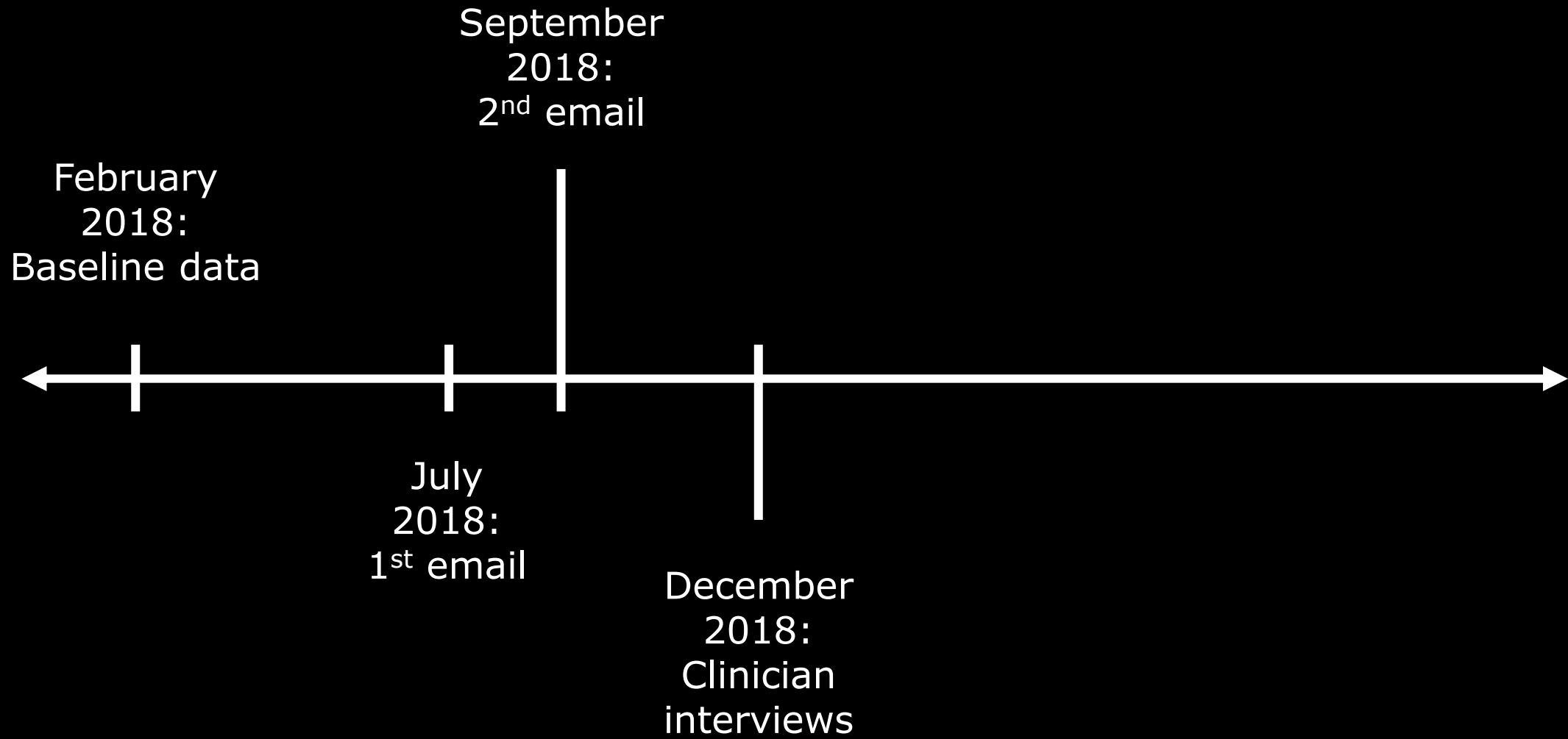
- awareness
- attitudes
- knowledge/skill
- concerns
- current practice



**Practice
environment**

- patients
- culture/social
- structural
- economic
- uncontrolled events

Reviewed relevant research studies and best practice guidelines





13 frontline staff interviewed

12 disagreed with O₂ for all patients

11 thought dyspnea was common

9 were aware of goal to reduce unused O₂

7 requested a guide or formal process

6 had no concerns with future practice change

What concerns do you have with not ordering oxygen for every patient on service?

Theme	Response
Negative patient outcome	"What if they need it at 2 am and it isn't there?"
Negative financial outcome	"Increased costs to our organization due to frequent STAT or 2-in-1-week deliveries"
Lack of guidance	"If we can't have a consistent message or protocol, then we should just send it out to everyone"
Patient preference	"Sometimes the family or facility is insistent on it"

What advantages are there in not ordering oxygen for every patient on admission?

Theme	Response
Less stress	"Decreasing the caregiver's list of things to manage"
Cost savings	"Presumably saving money"
Safer practice	"Less safety hazards"
Best practice	"Morphine is more effective."
Less waste	"We are not wasting resources."
Patient preference	"If someone is refusing [oxygen], it builds rapport and I think we have to honor their wishes."

**Assess
barriers and supports**

**Evidence-based
innovation**

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Reviewed relevant research studies and best practice guidelines

Potential adopters

- awareness
- attitudes
- knowledge/skill
- concerns
- current practice

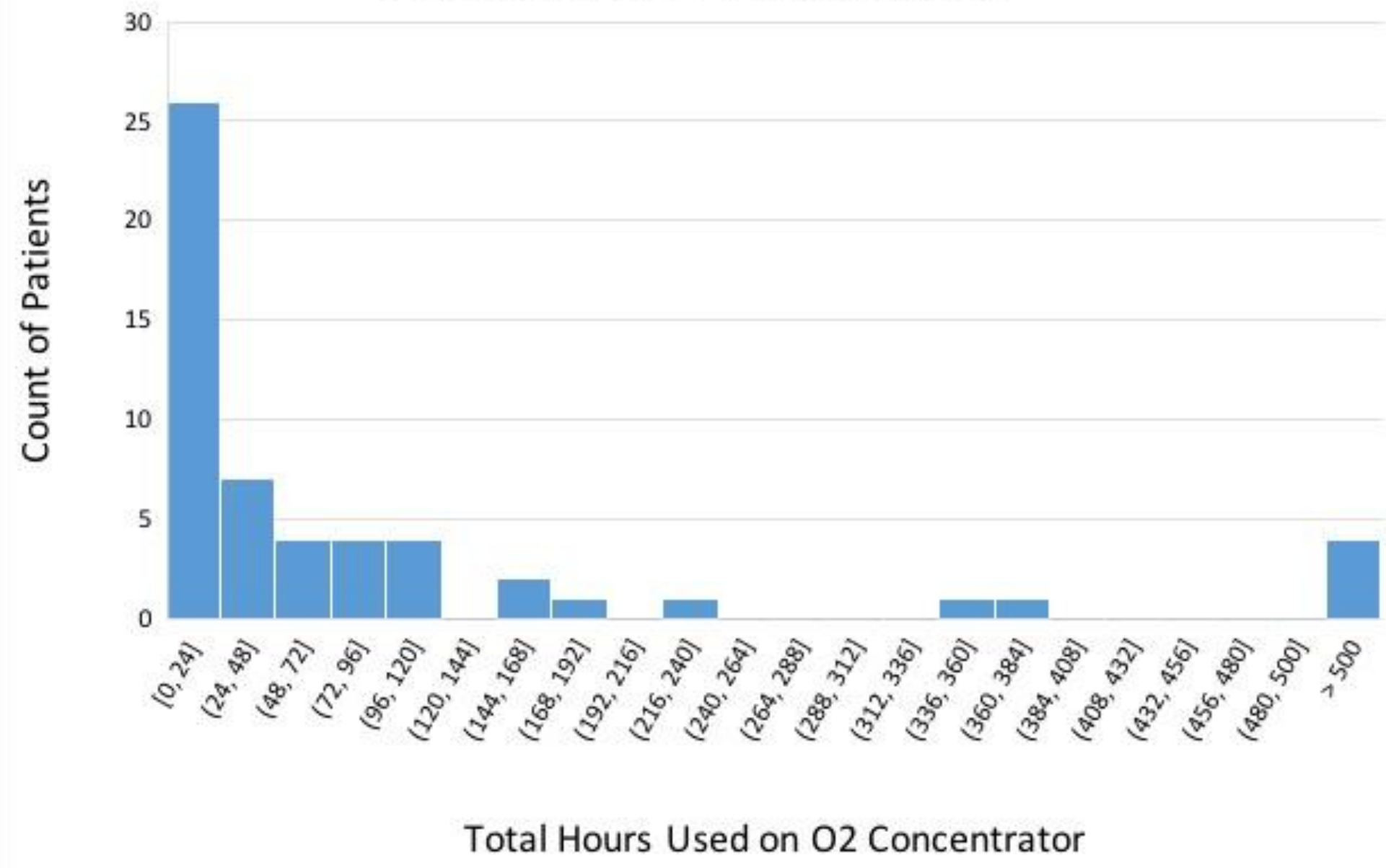


Surveyed 13 clinicians on O₂ use, practice of dyspnea management and concerns regarding practice change

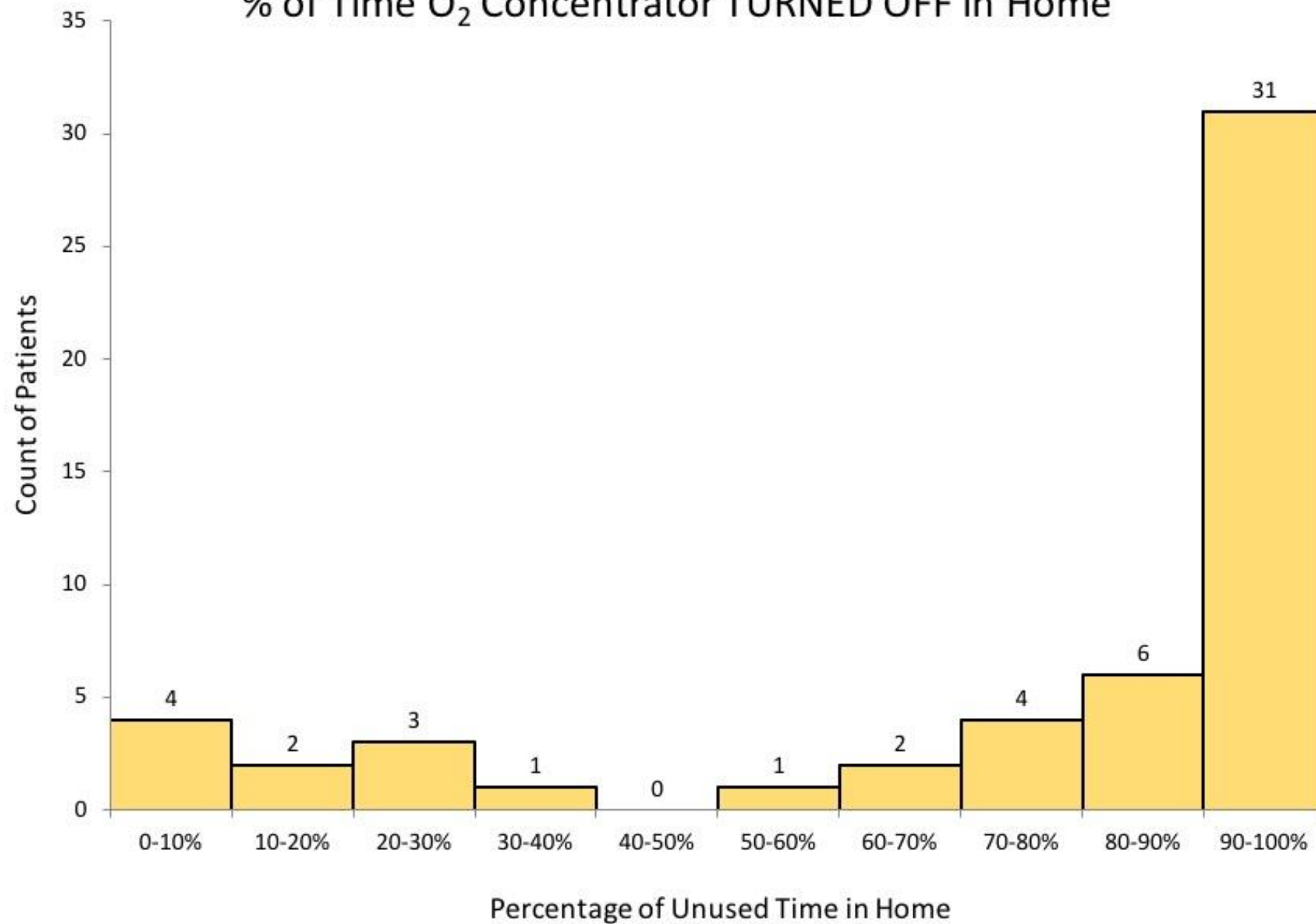
**Practice
environment**

- patients
- culture/social
- structural
- economic
- uncontrolled events

Total Hours of O2 Used Histogram



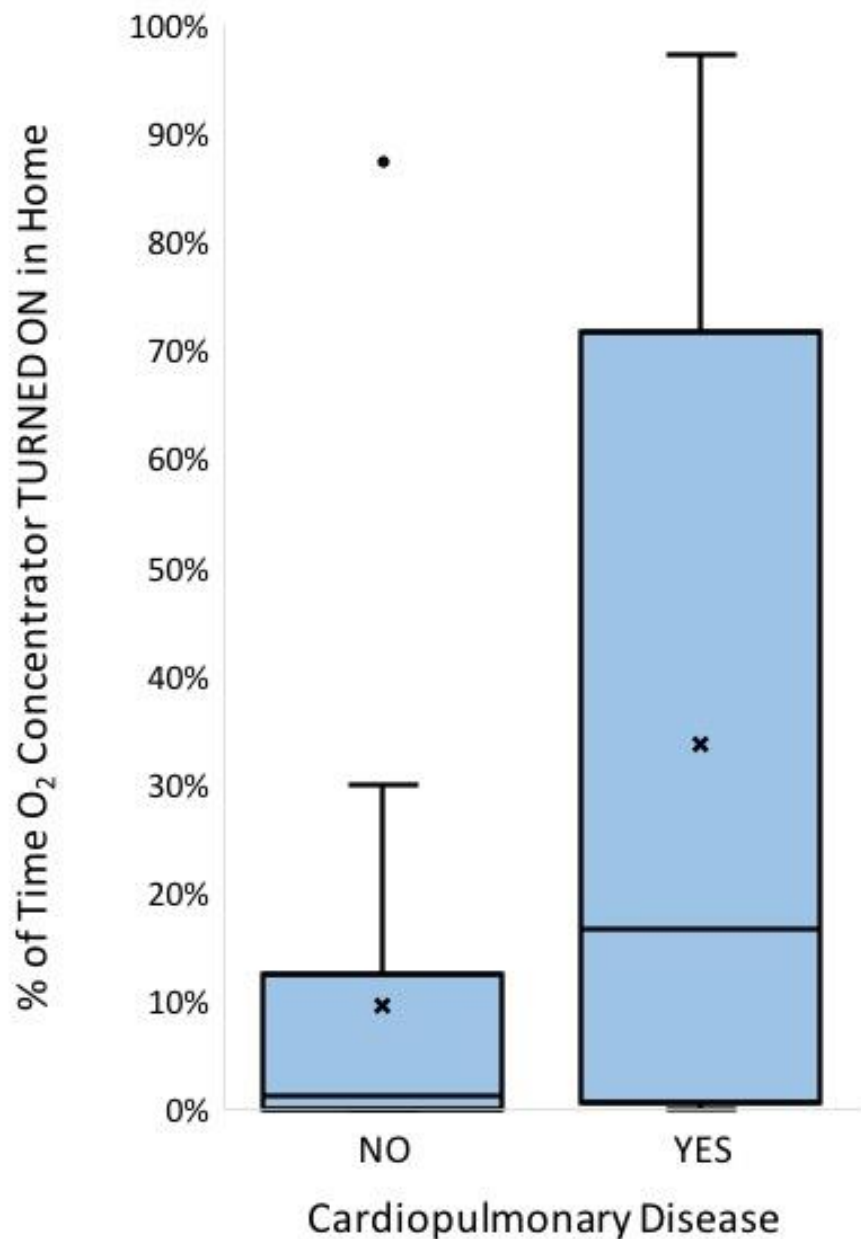
% of Time O₂ Concentrator TURNED OFF in Home



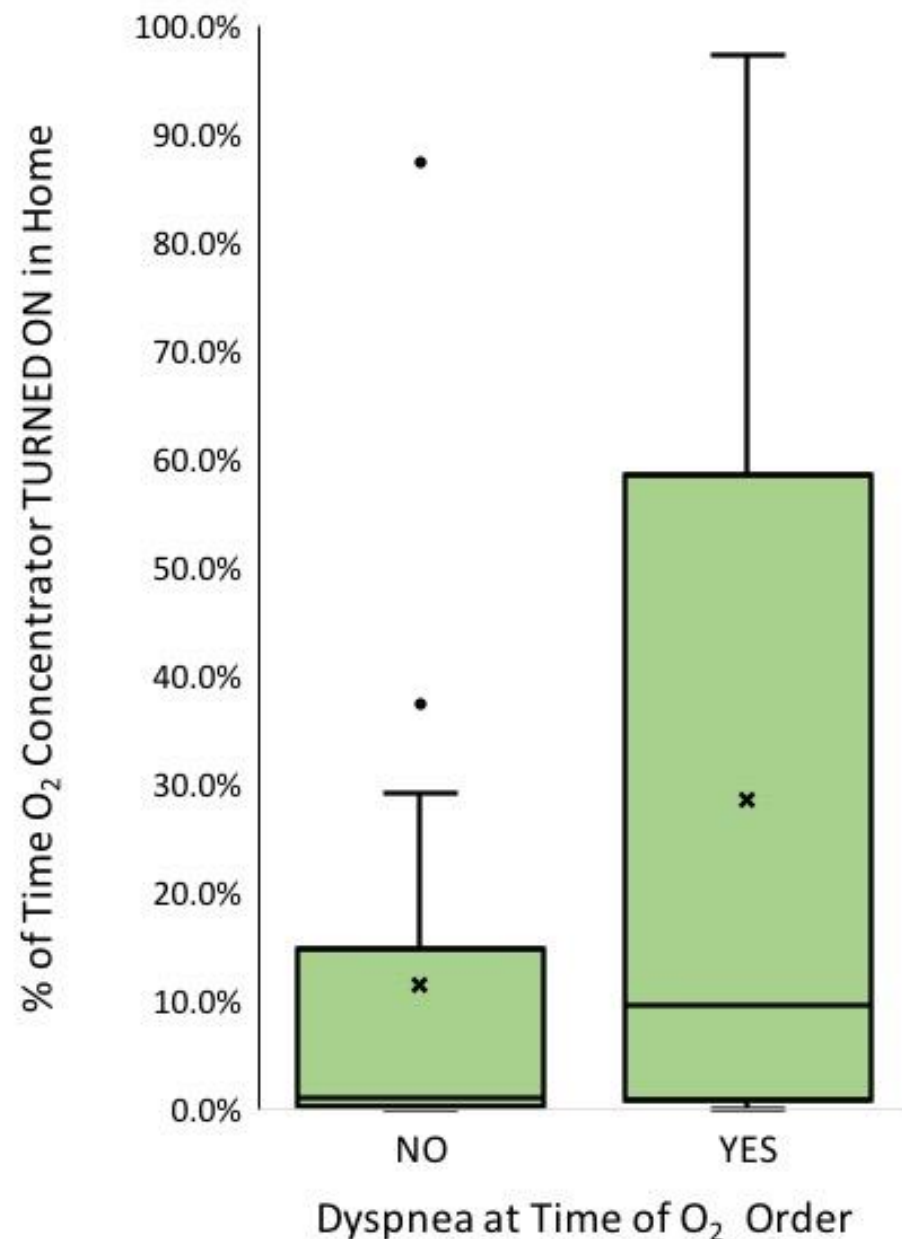
Concentrators went unused
86% of the time

> 58,000 hours

Comparing Total O₂ Concentrator Use by Presence of Cardiopulmonary Disease



Comparing Total O₂ Concentrator Use by Presence of Dyspnea at Time of O₂ Order



**Assess
barriers and supports**

**Evidence-based
innovation**

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Reviewed relevant research studies and best practice guidelines



Potential adopters

- awareness
- attitudes
- knowledge/skill
- concerns
- current practice



Surveyed 13 clinicians on O₂ use, practice of dyspnea management and concerns regarding practice change

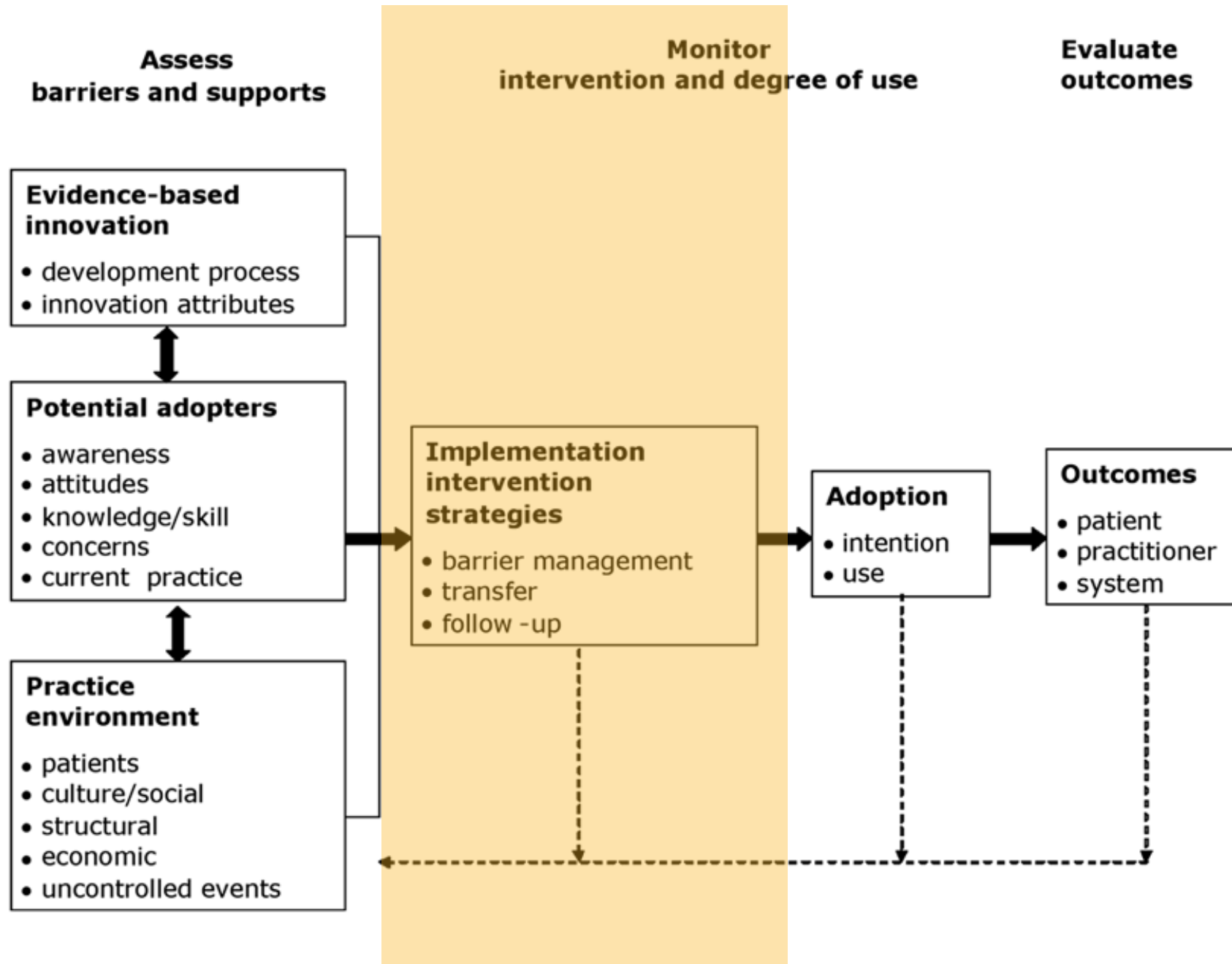


**Practice
environment**

- patients
- culture/social
- structural
- economic
- uncontrolled events



Reviewed and analyzed patient charts and oxygen concentrator usage data





Best Practice for Troubled Breathing at End of Life

Lauren Olsen, RN, DNP Student

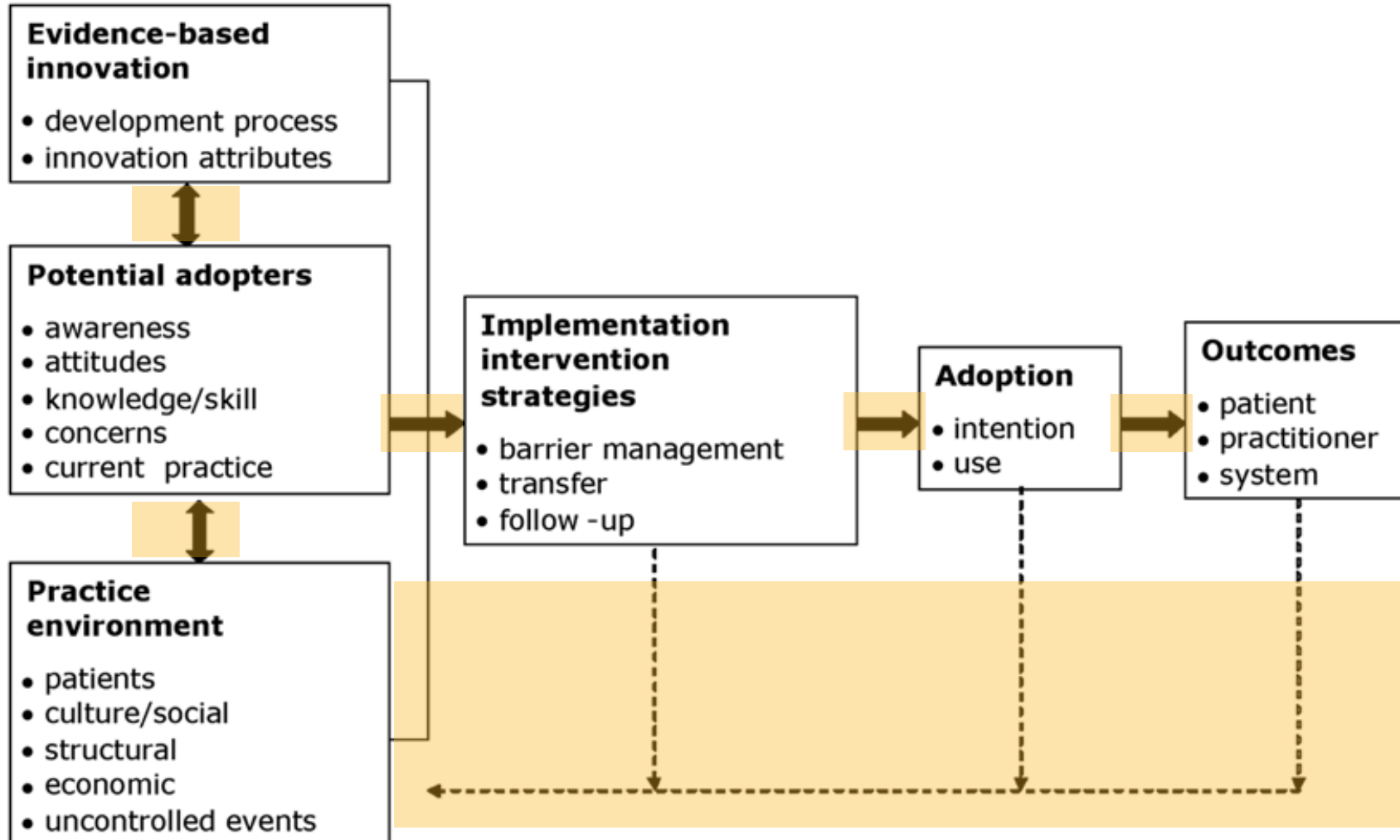
January 9, 2019



**Assess
barriers and supports**

**Monitor
intervention and degree of use**

**Evaluate
outcomes**

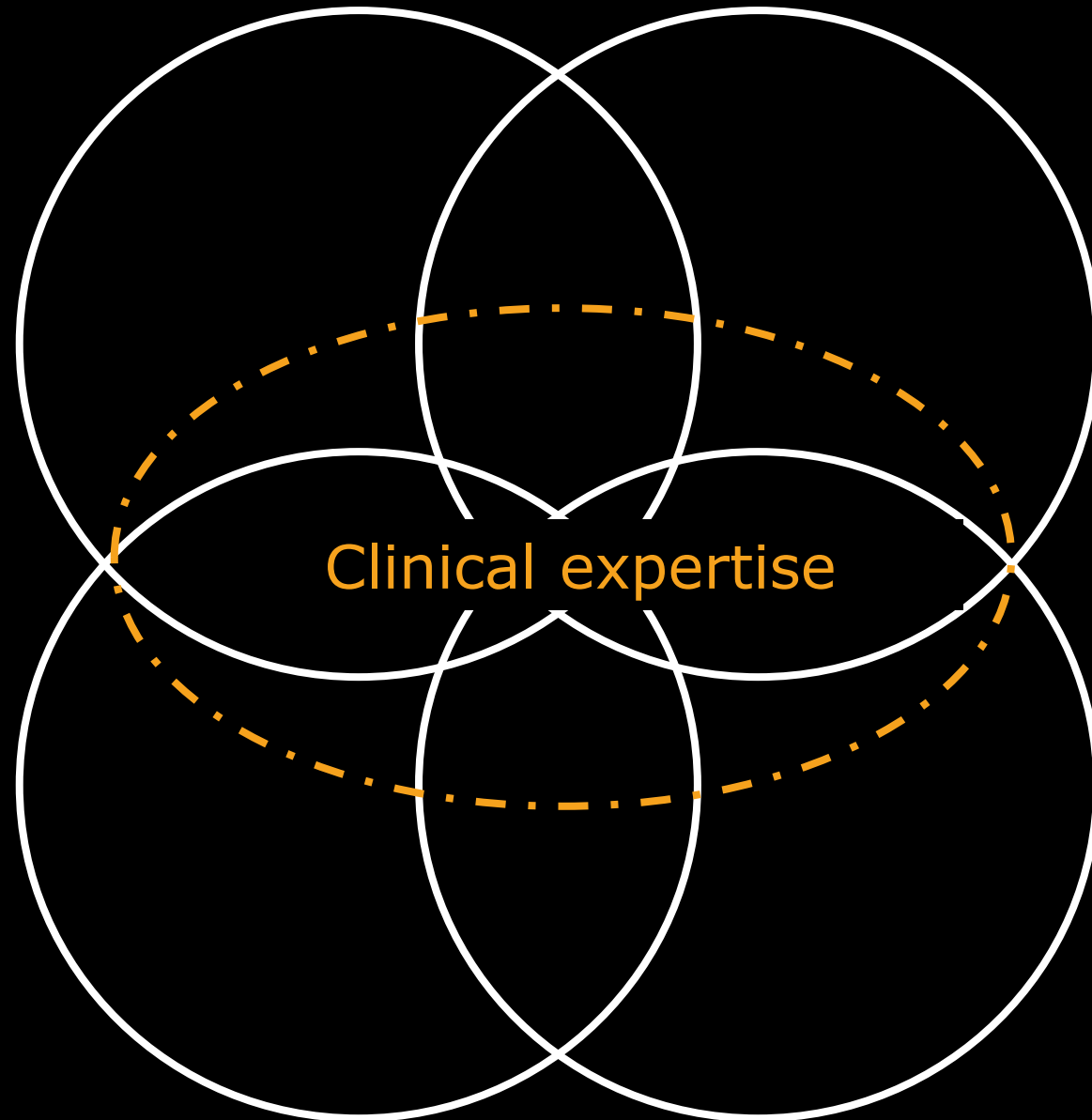


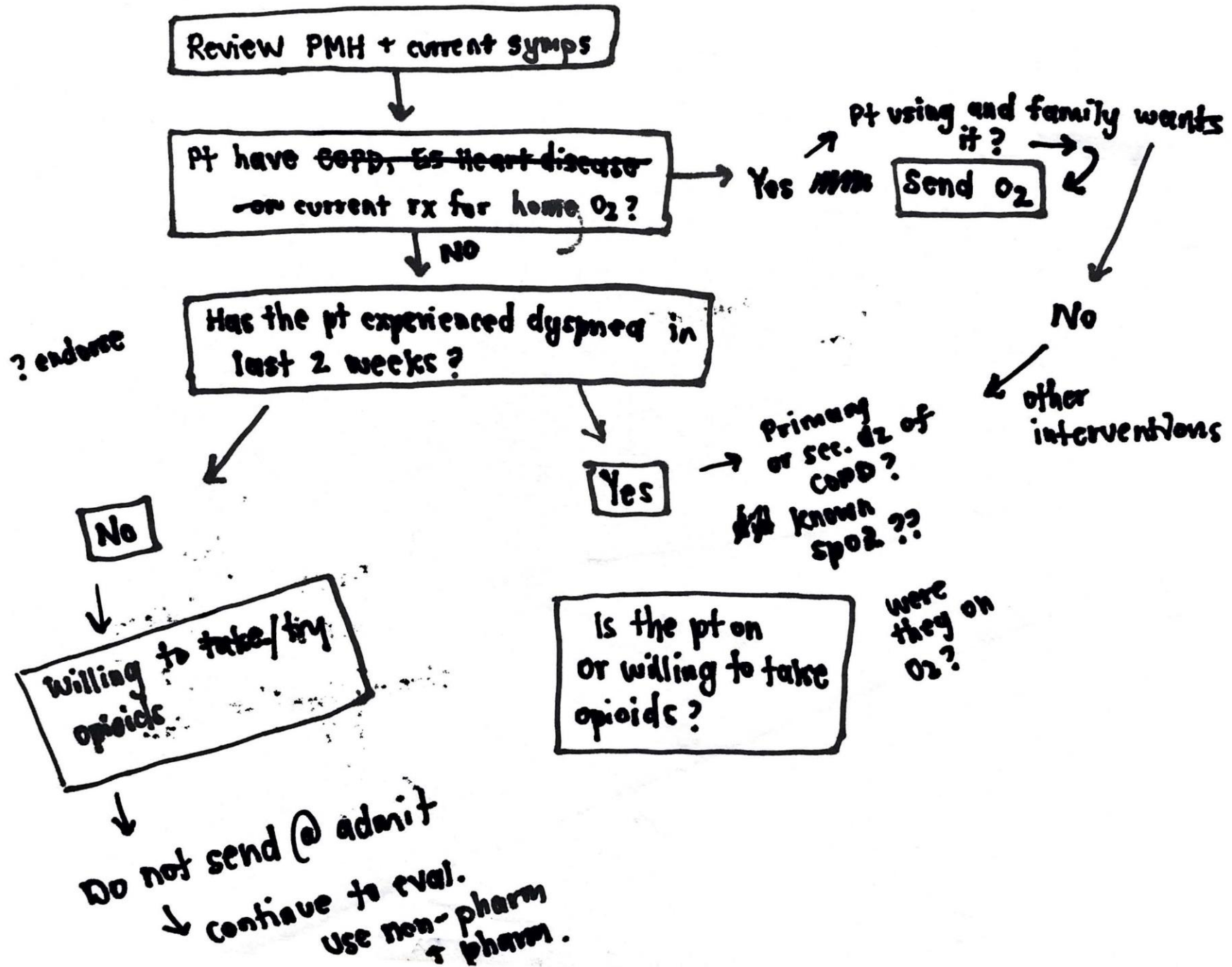
Clinical state,
setting, and
circumstances

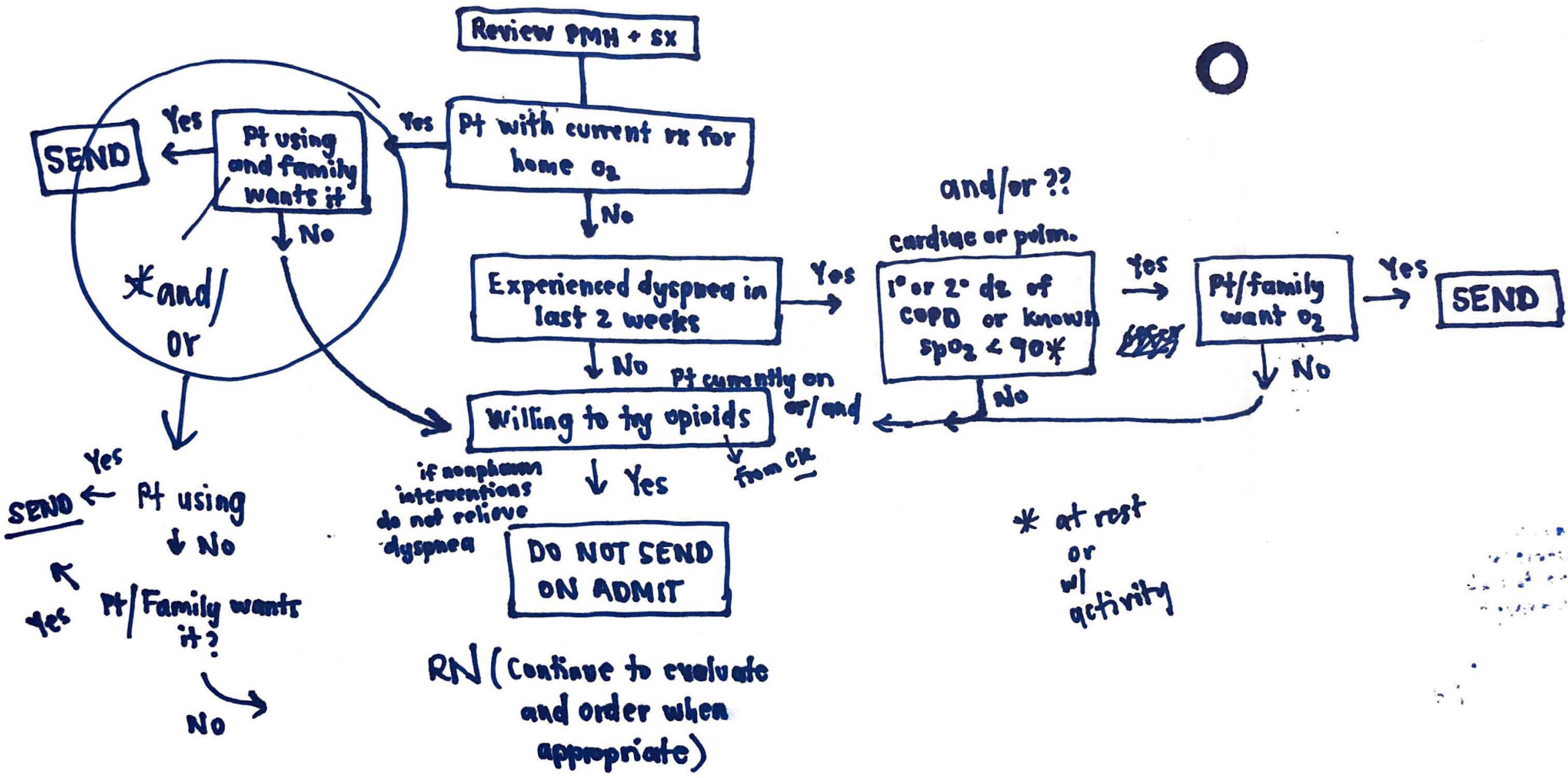
Patient's
preferences
and actions

Research
Evidence

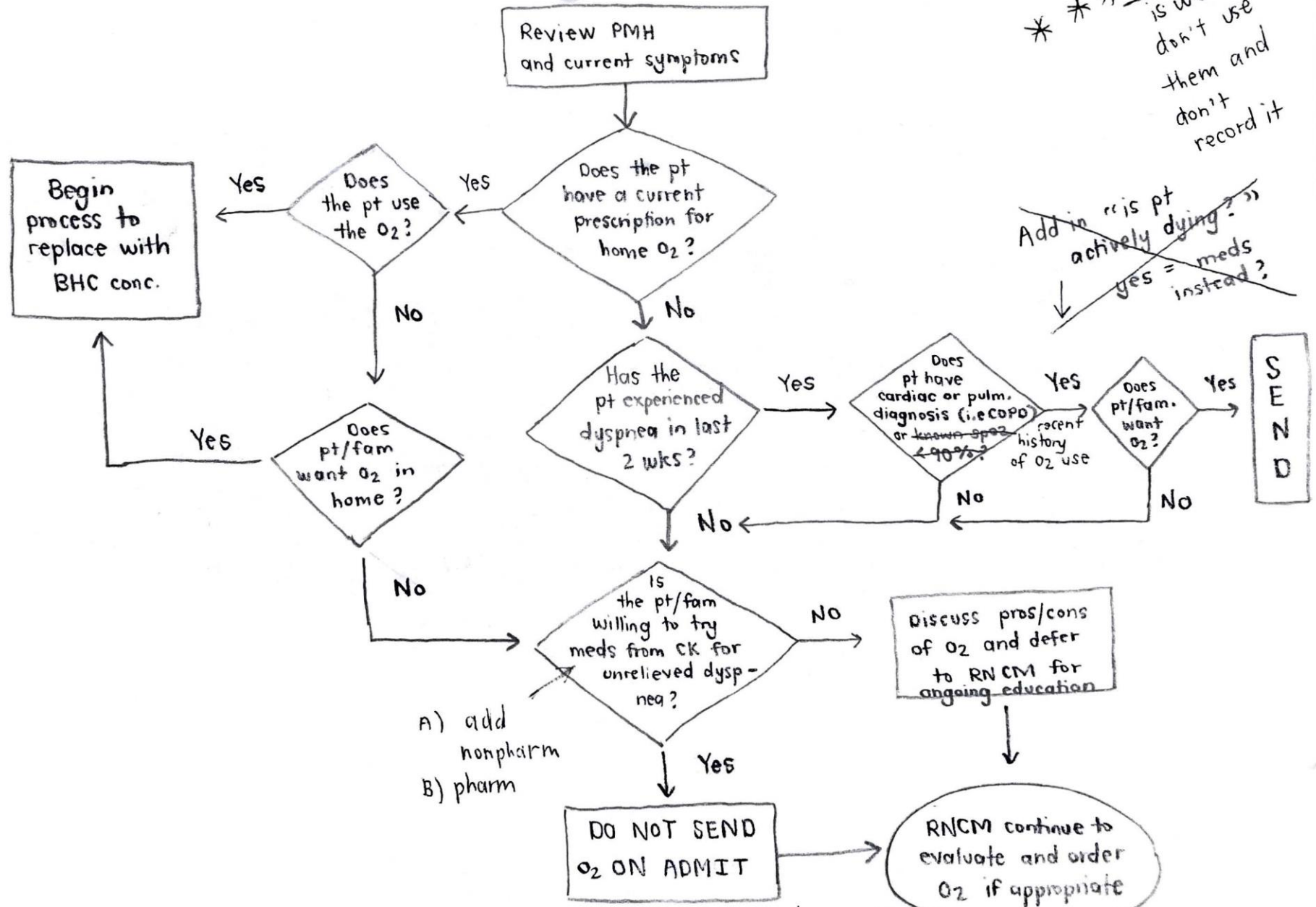
Health care
resources







Decision Tree for whether to order O₂ concentrator on admit



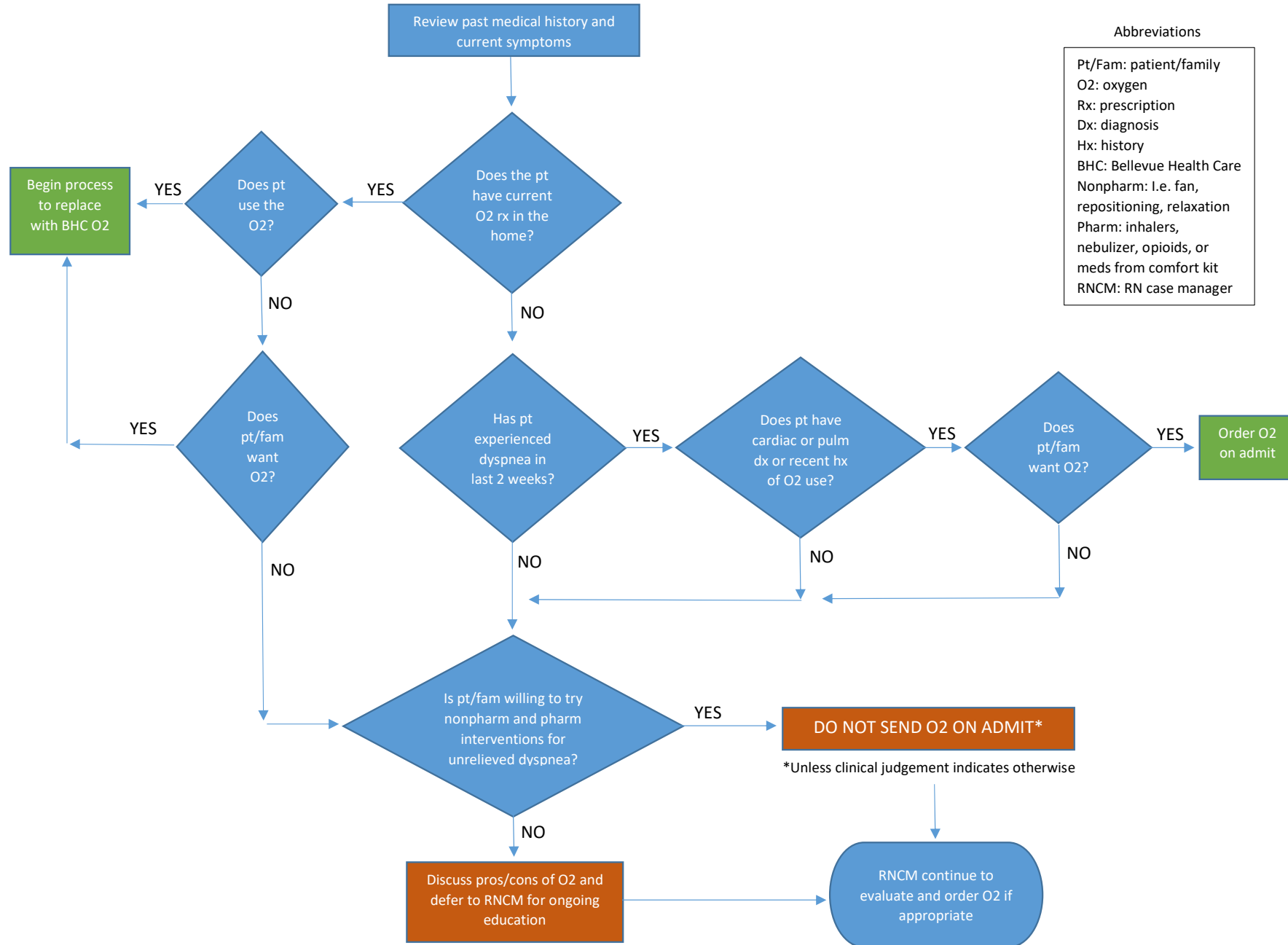
*** our practice is we don't use them and don't record it

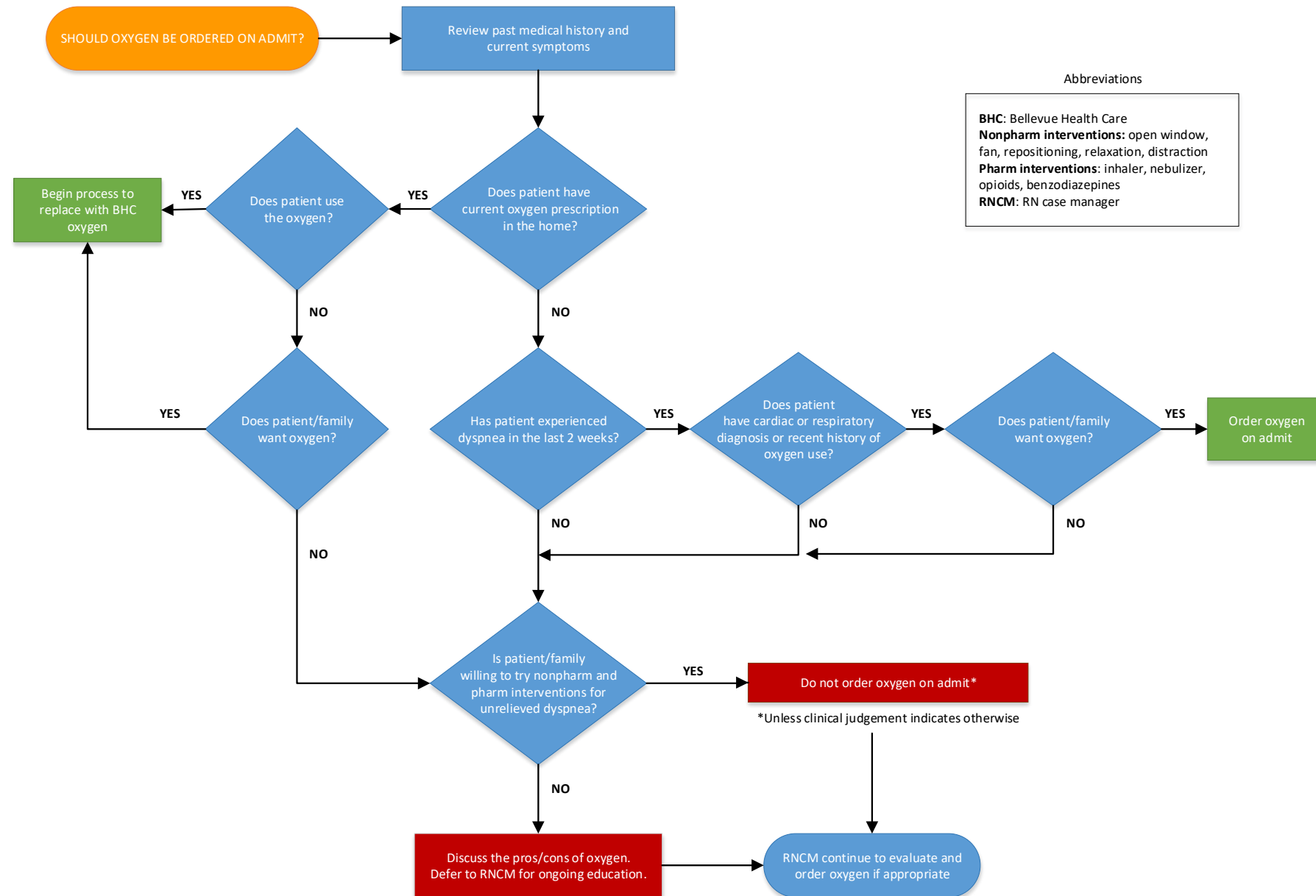
~~Add in "is pt actively dying?"~~
~~yes = meds instead?~~

- A) add nonpharm
- B) pharm

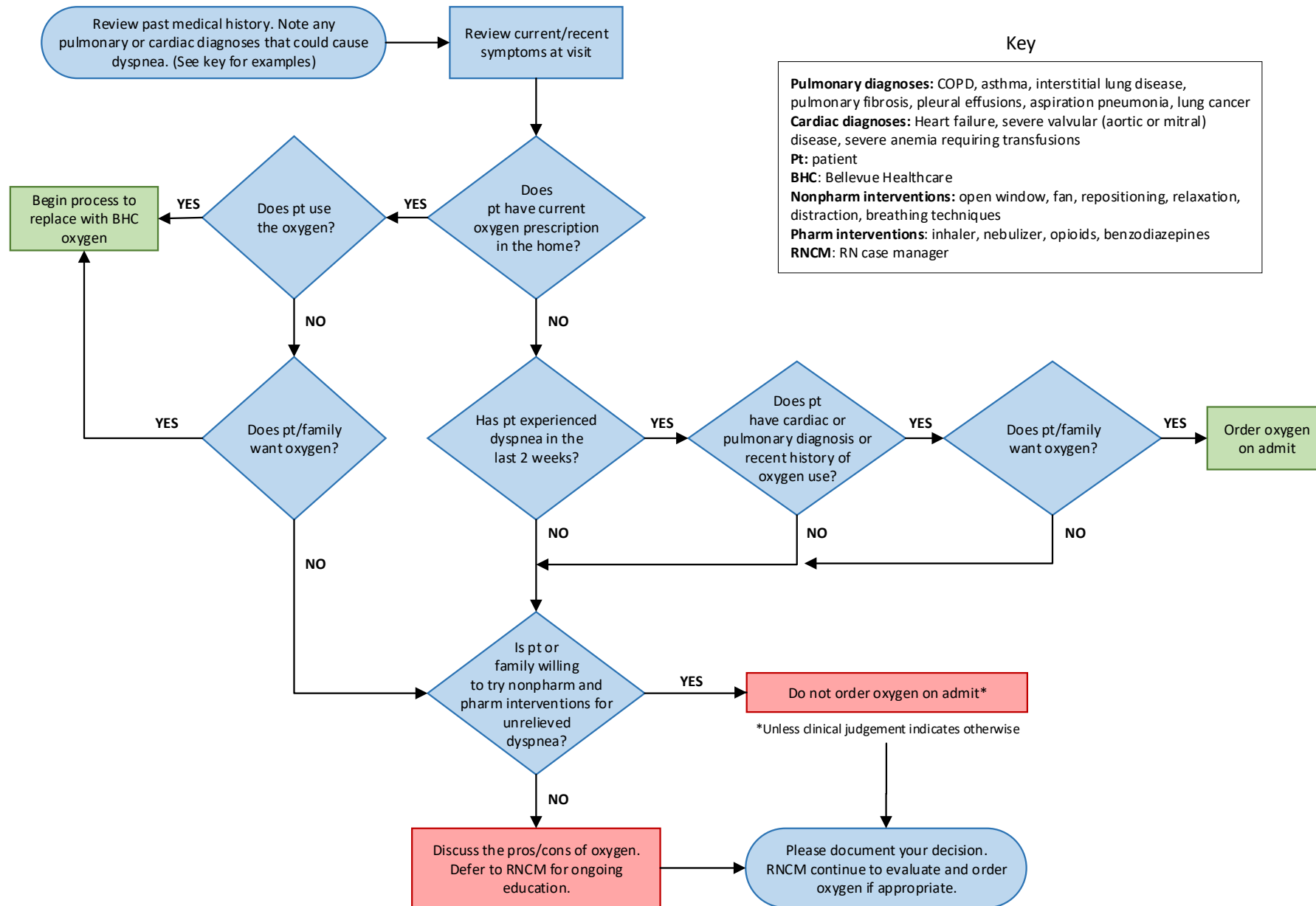
* unless clinical judgement indicates otherwise

Should I order oxygen on admit?

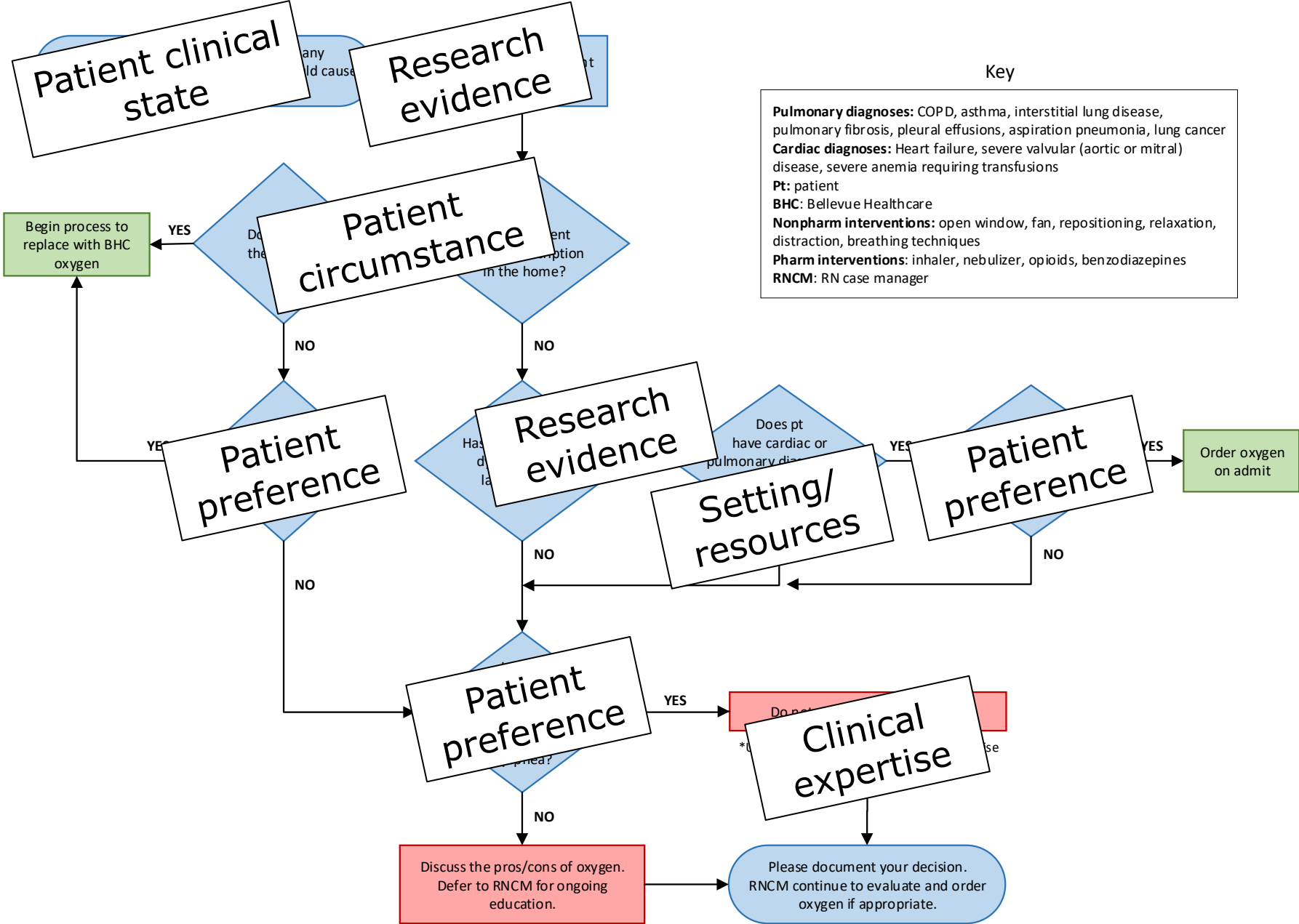


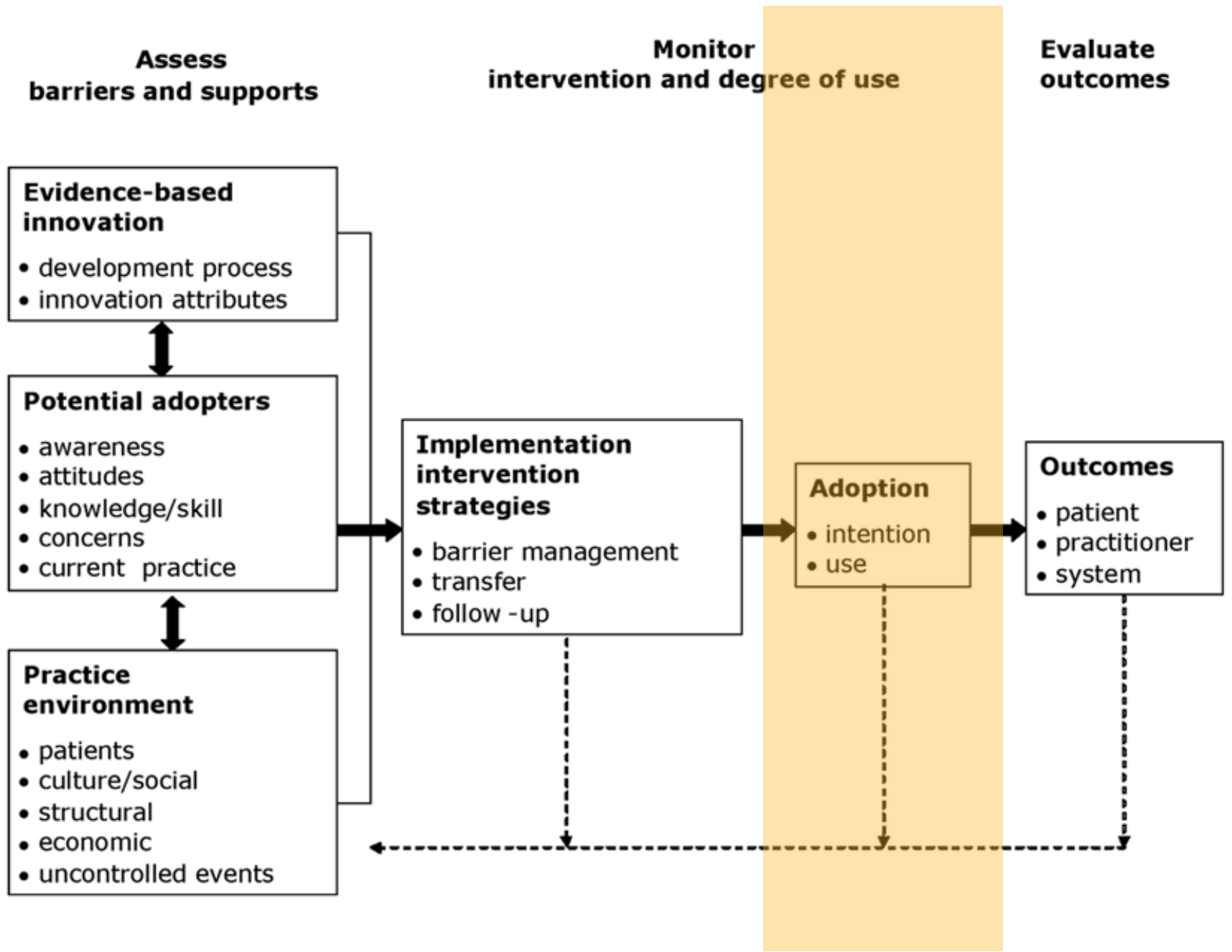


SHOULD OXYGEN BE ORDERED ON ADMISSION?



SHOULD OXYGEN BE ORDERED ON ADMISSION?





TRIP Model

Translating Research Into Practice

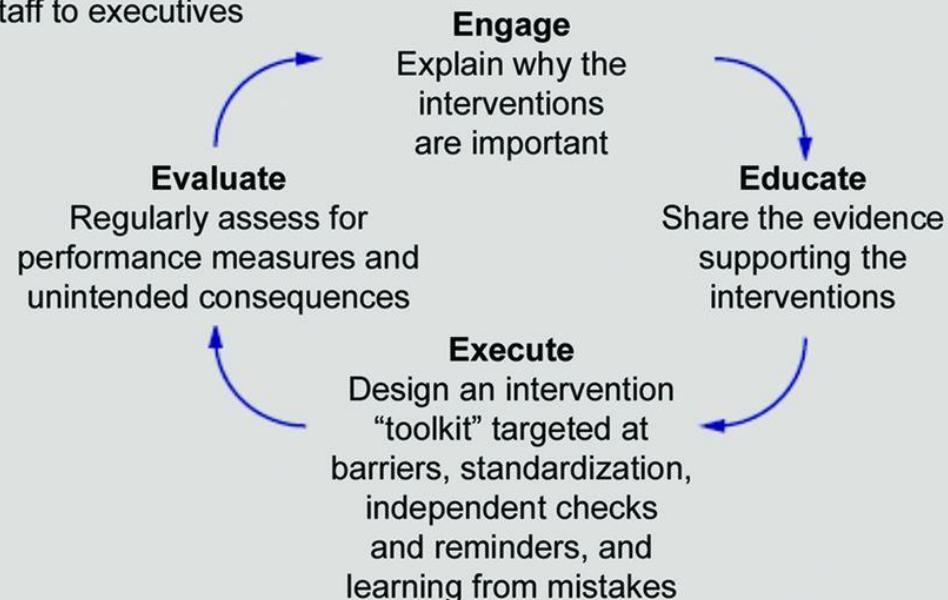
Pronovost, Berenholtz,
Needham (2008)

1. Summarise the evidence
Identify interventions associated with improved outcomes
Select interventions with the largest benefit and lowest barriers to use
Convert interventions to behaviours

2. Identify local barriers to implementation
Observe staff performing the interventions
“Walk the process” to identify defects in each step of implementation
Enlist all stakeholders to share concerns and identify potential gains and losses associated with implementation

3. Measure performance
Select measures (process or outcome)
Develop and pilot test measures
Measure baseline performance

4. Ensure all patients receive the interventions
Implement the “four E’s” targeting key stakeholders from front line staff to executives



Overall concepts

Envision the problem within the larger healthcare system
Engage collaborative multidisciplinary teams centrally (stages 1-3) and locally (stage 4)

RECOMMENDATIONS

USING THE 6 E'S OF TRIP MODEL

INITIAL USE

- **EDUCATE** admission team on new decision flowchart
 - Repeat education weekly x1 month given repetition needed for adult learners.
- **ENGAGE** staff by highlighting advantages of this change and manager/physician support.
- **EXECUTE** flowchart by providing both paper and electronic copies to admission team clinicians.



SUSTAINED USE

- **EVALUATE** and address any problems noticed by clinicians and update flowchart as needed.
- **EXTEND** use of flowchart by introducing it to Liaison and Intake teams.
- To help practice change **ENDURE**, create a process card to go along with decision flowchart.



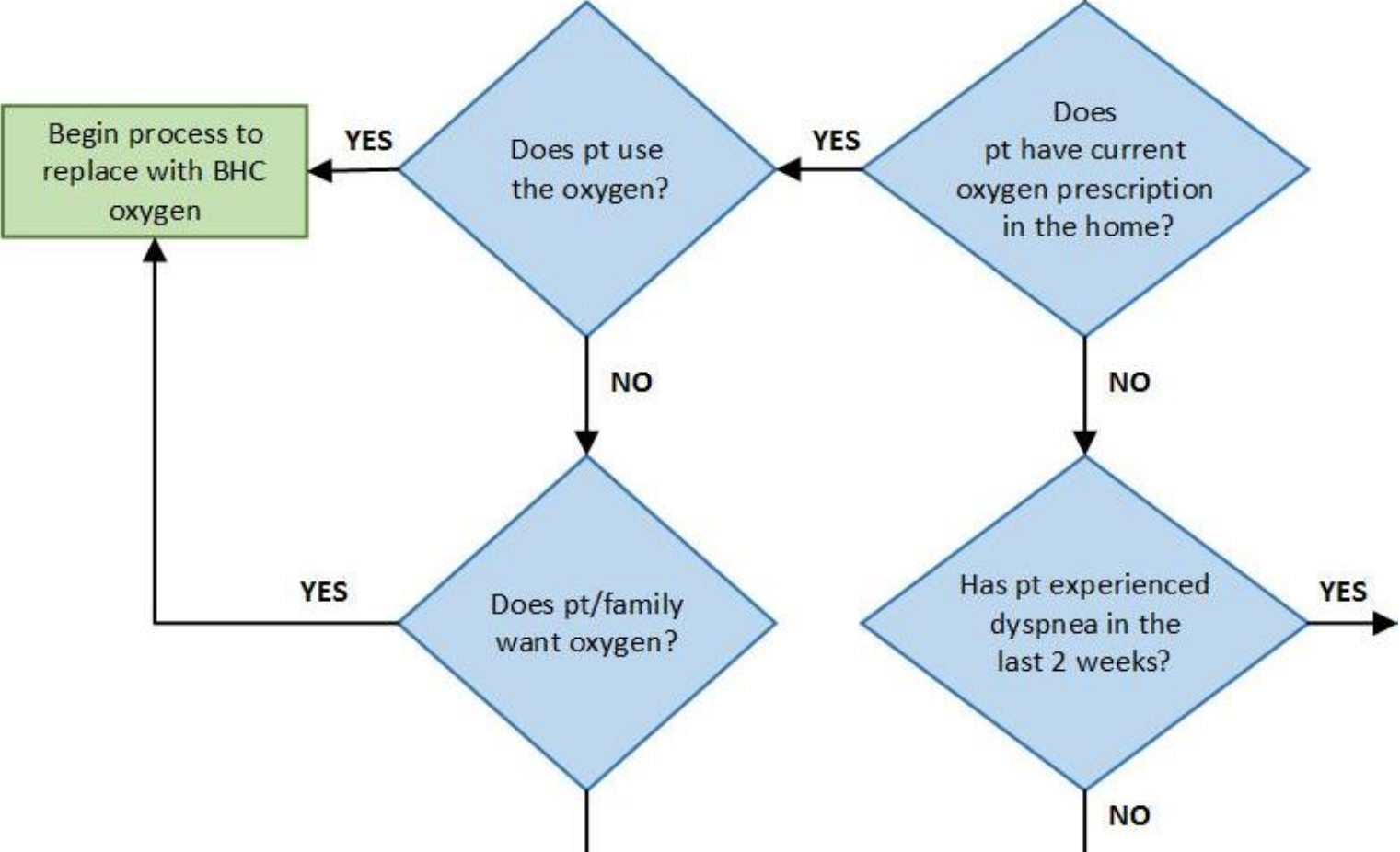
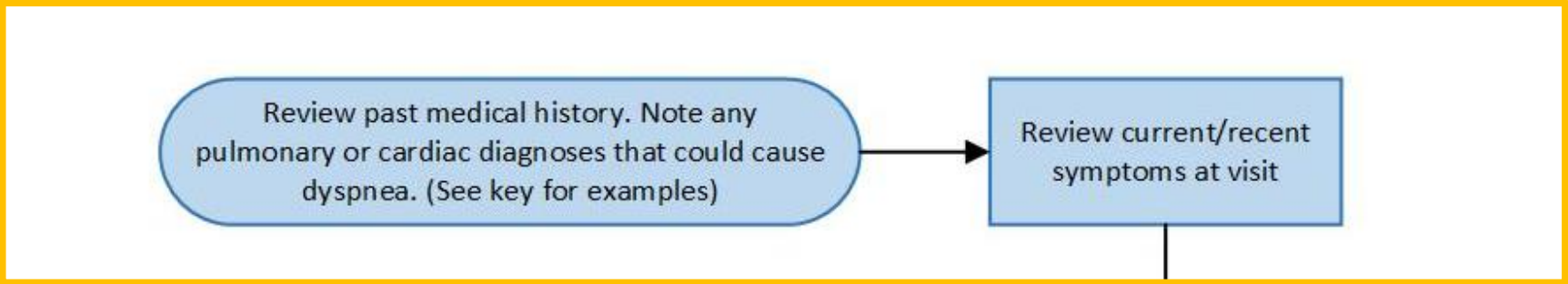


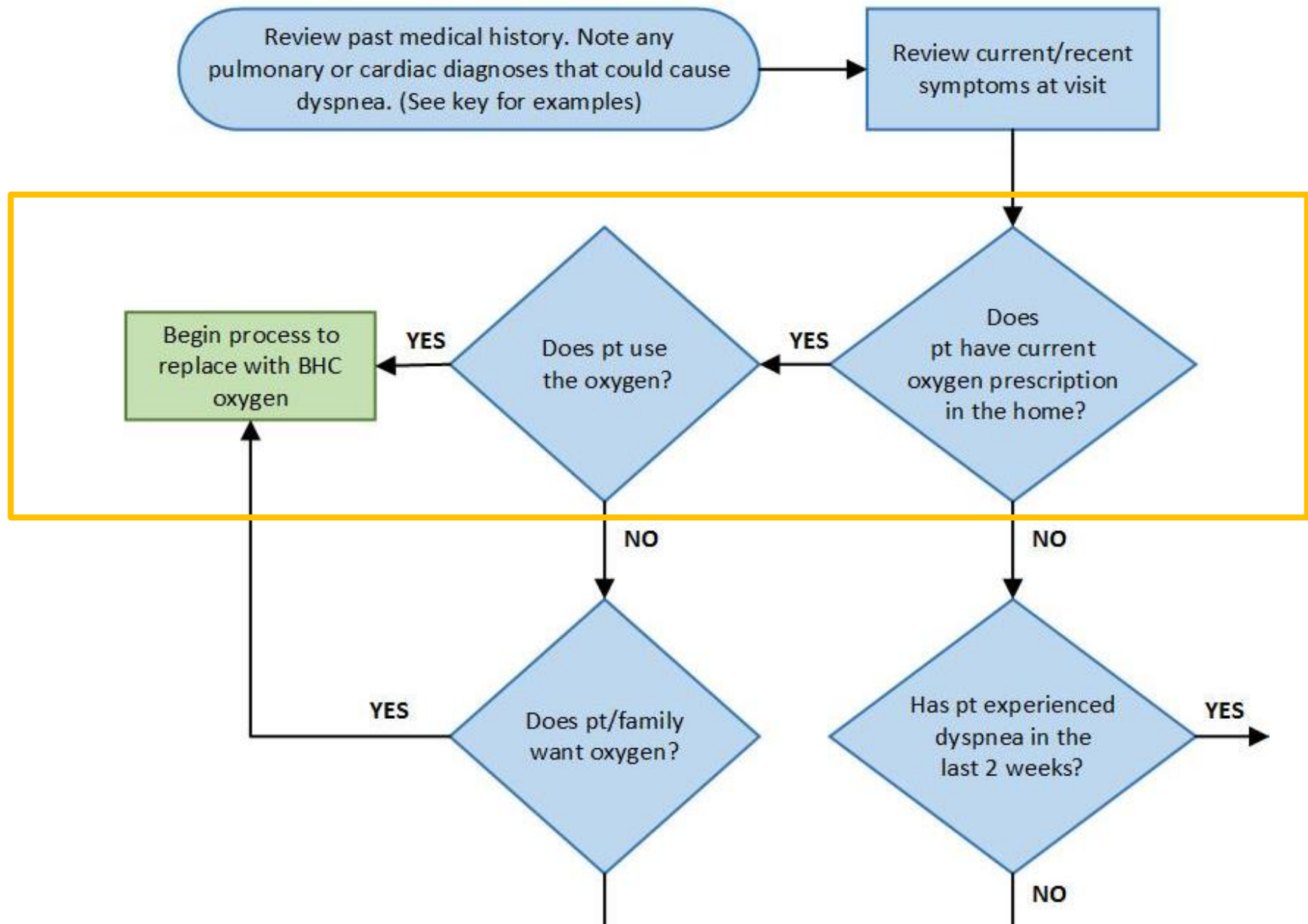
Best Practice for Troubled Breathing at End of Life

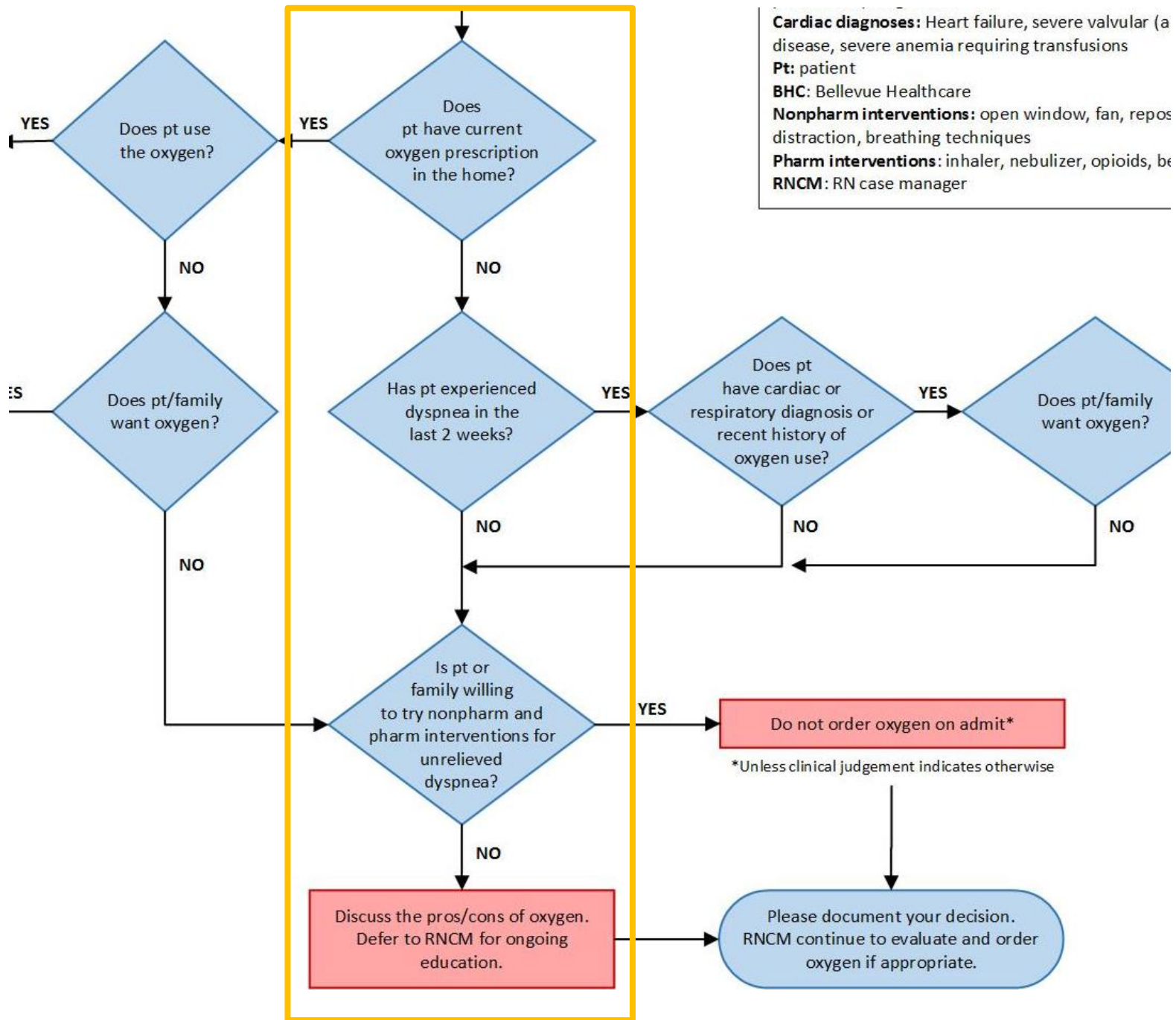
(And where does oxygen fit in?)

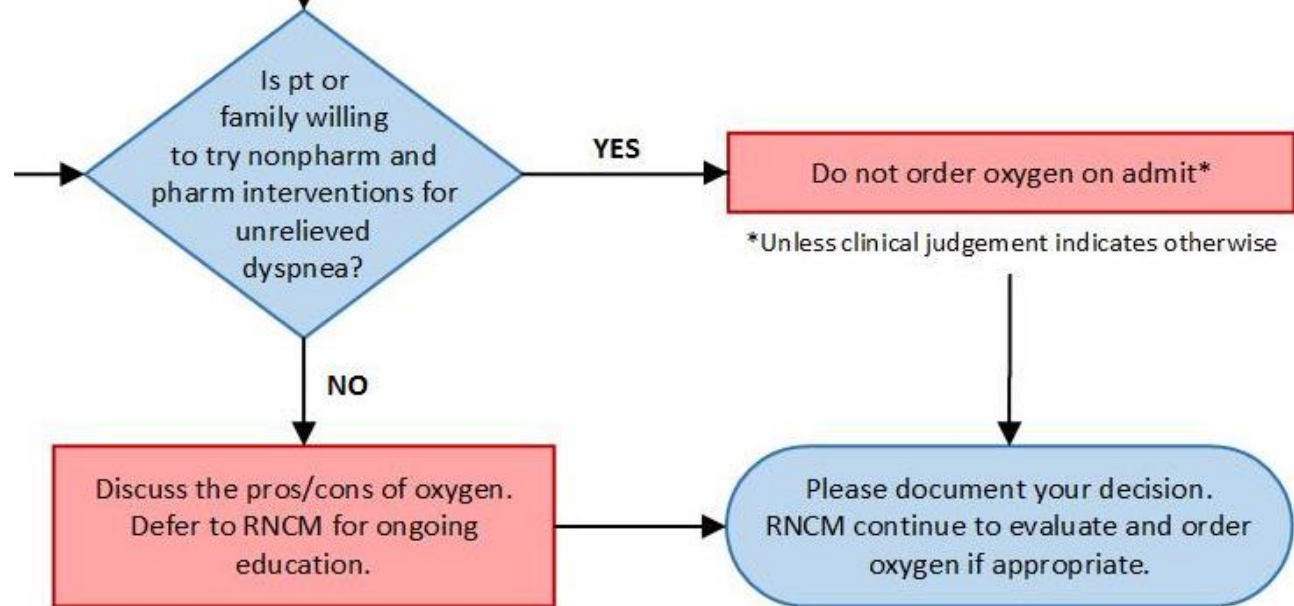
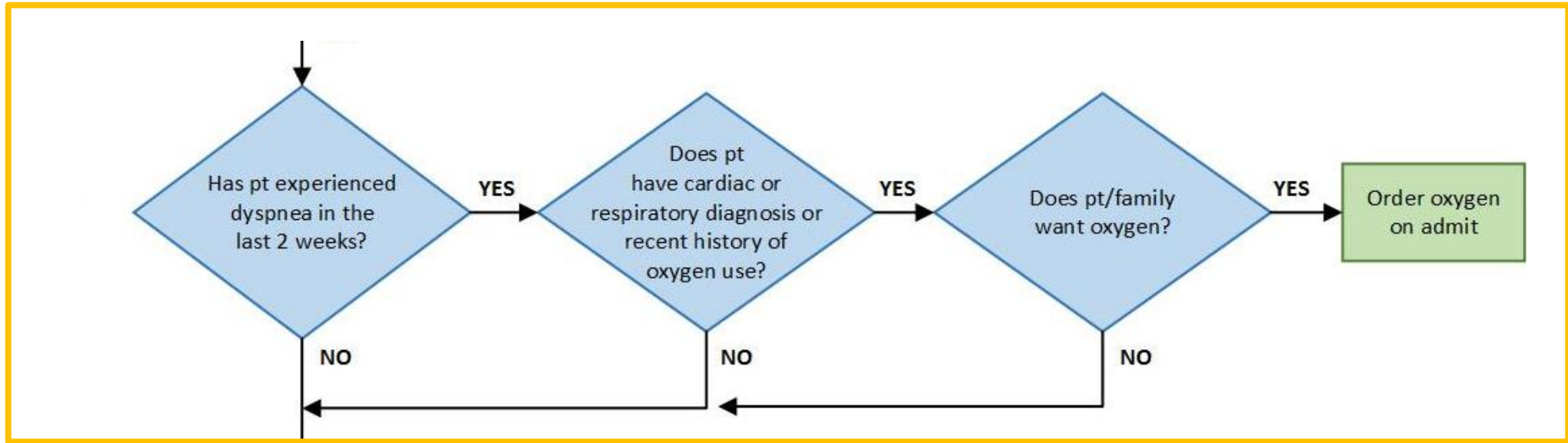
Lauren Smilde, RN

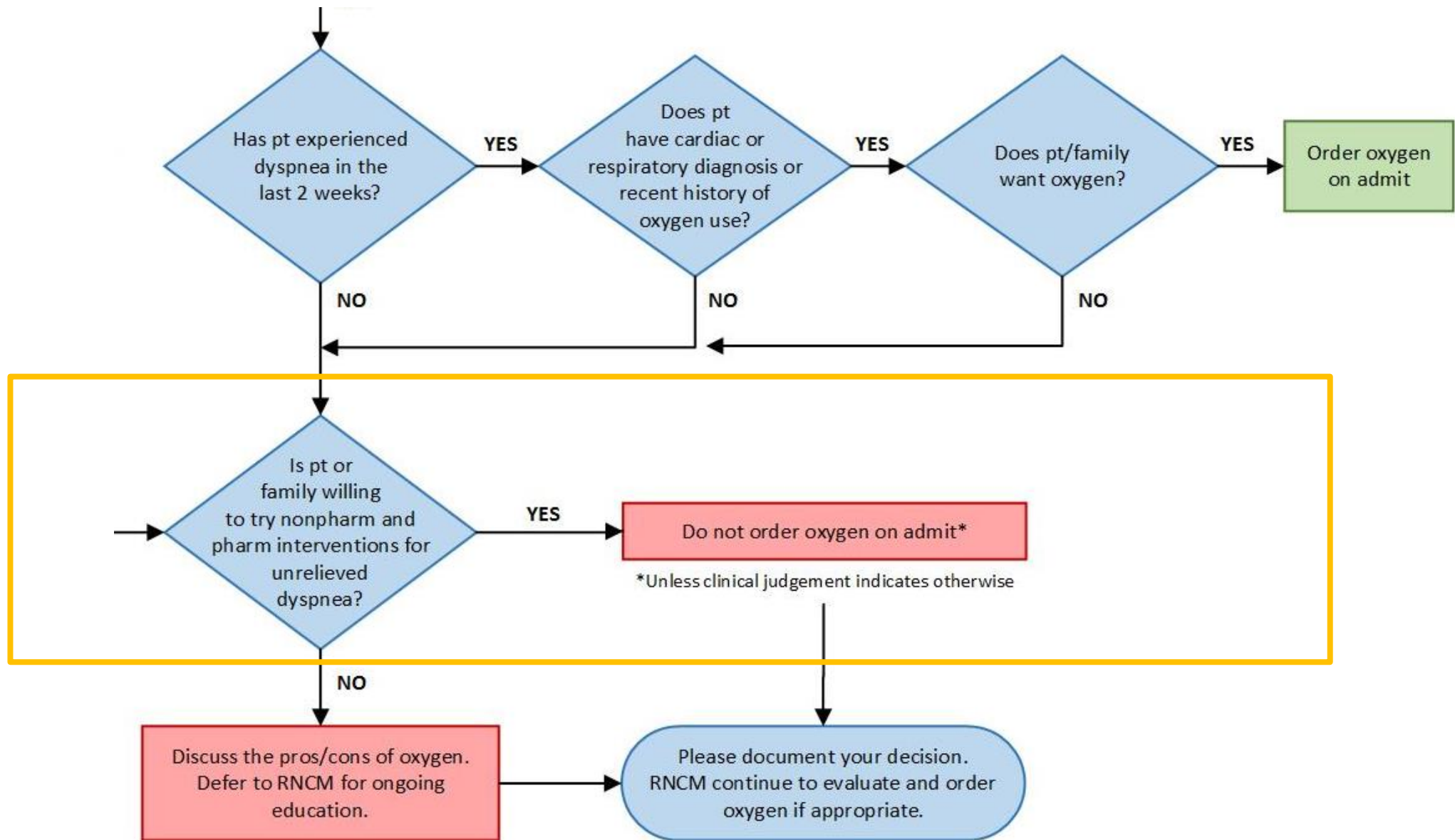
Recorded on 7/16/19

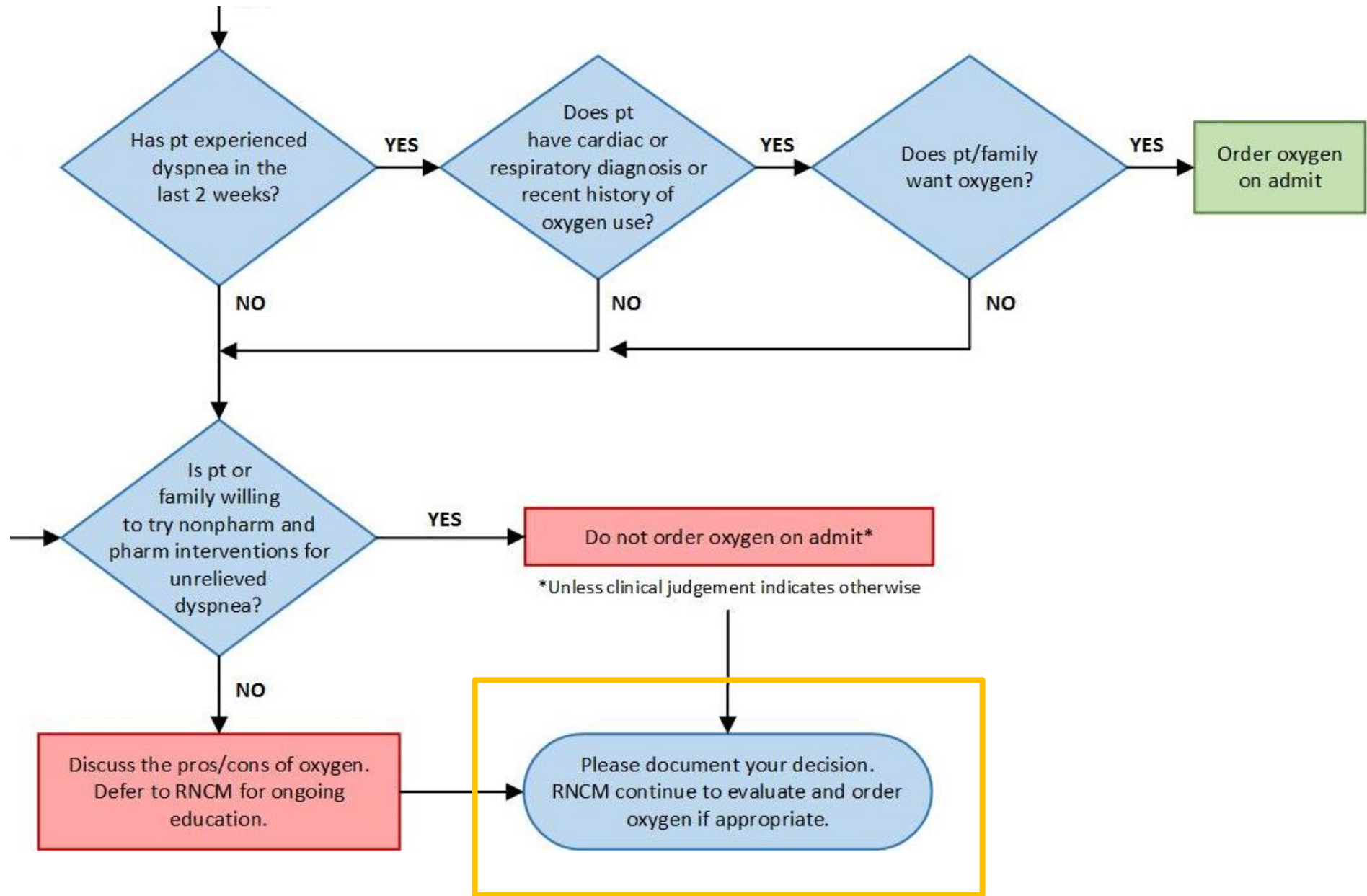












**Assess
barriers and supports**

Evidence-based innovation

- development process
- innovation attributes



Potential adopters

- awareness
- attitudes
- knowledge/skill
- concerns
- current practice



Practice environment

- patients
- culture/social
- structural
- economic
- uncontrolled events

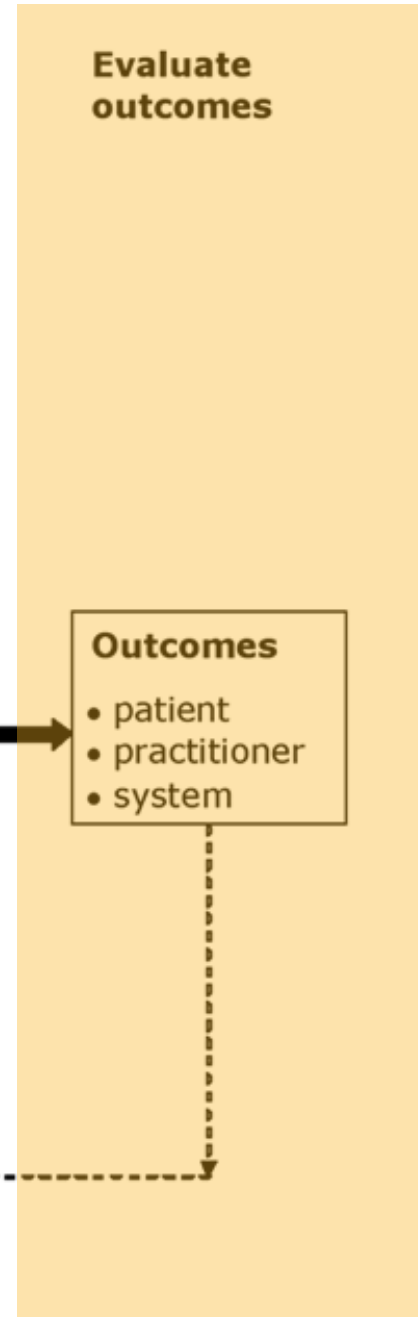
**Monitor
intervention and degree of use**

Implementation intervention strategies

- barrier management
- transfer
- follow-up

Adoption

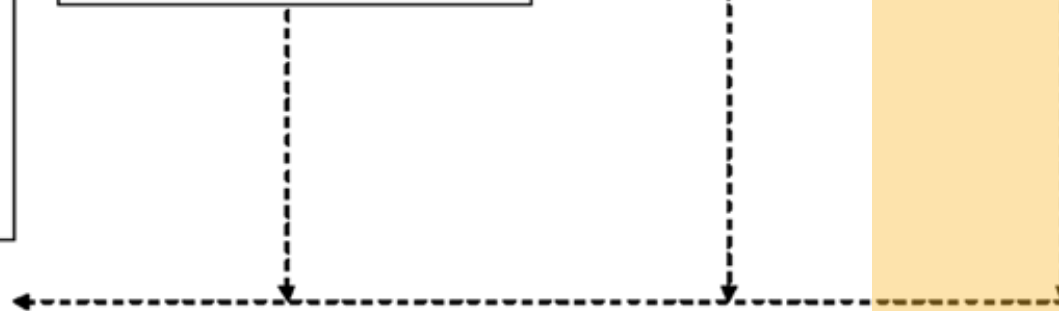
- intention
- use



**Evaluate
outcomes**

Outcomes

- patient
- practitioner
- system



TAKE HOME POINTS

1. Evidence-based practice = Research +++++

2. Oxygen is NOT recommended for all patients

3. You all have the ability to change practice



Thank you!

Please email me at
lauren_smilde@valleymed.org

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Research Studies on Oxygen

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