



**Brigham and Women's Hospital**

Founding Member, Mass General Brigham

# **Palliative Care in the ICU**

Katherine H. Walker, MD, MSc  
Attending Physician

Pulmonary and Critical Care Medicine  
Brigham and Women's Hospital

Supportive Oncology  
Dana Farber Cancer Institute

Instructor  
Harvard Medical School



# Katherine H. Walker, MD, MSc



Harvard Medical School  
Medicine Residency at Brigham & Women's Hospital  
Pulmonary & Critical Care Fellowship at BWH  
Hospice & Palliative Care Fellowship at  
Mass General Brigham / Dana Farber Cancer Institute

Instructor at HMS

- Clinical focus: Critical Care
- Research focus:

Palliative Care in Chronic Critical Illness



# DISCLOSURES

---

I receive consulting honoraria from two companies that work on improving clinical education and access to subspecialty care for primary care clinicians (AristaMD and Alosa Health); neither relationship pertains to today's topic.

Some slides were adapted from Dr. Joshua Lakin, who also has no disclosures and to whom I am grateful.



# OBJECTIVES

---

- Define palliative care & the patients who may benefit from it
- Apply symptom management approaches to ICU patient cases
- Review palliative care communication techniques to improve goal-concordant care in the ICU



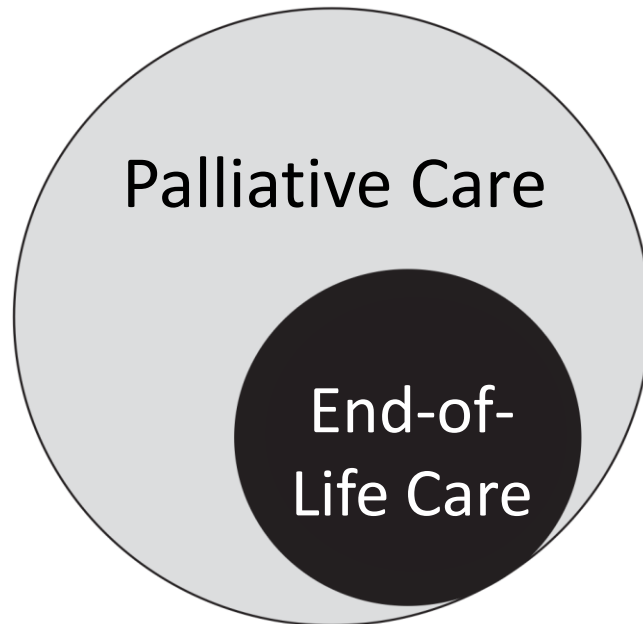
# Palliative Care

Specialized medical care for patients with serious illness

Provide relief from:

- symptoms
- stress of the illness

Goal: improve quality of life



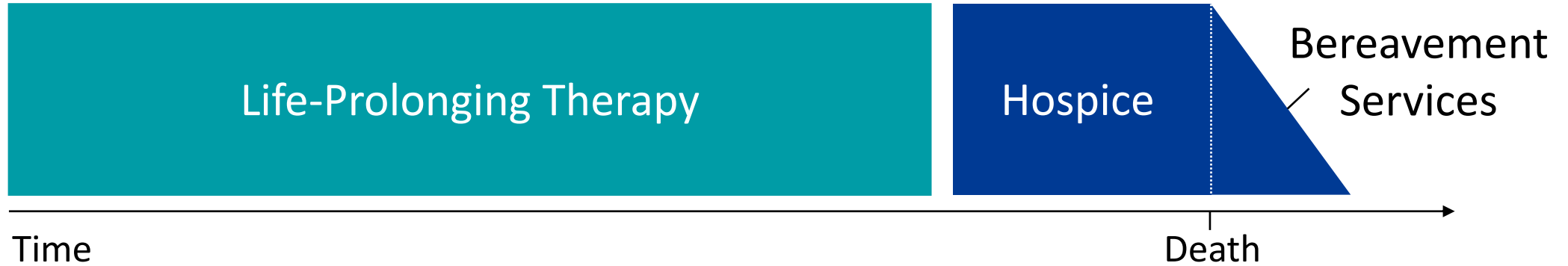
Definition adapted from The Center for the Advancement of Palliative Care

Images from [seriousillnessmessaging.org](https://www.seriousillnessmessaging.org)

Graphic adapted from J. Randall Curtis, *Eur Respir J* 2008

# Palliative Care is Appropriate at Any Stage of Serious Illness

Old  
concept:

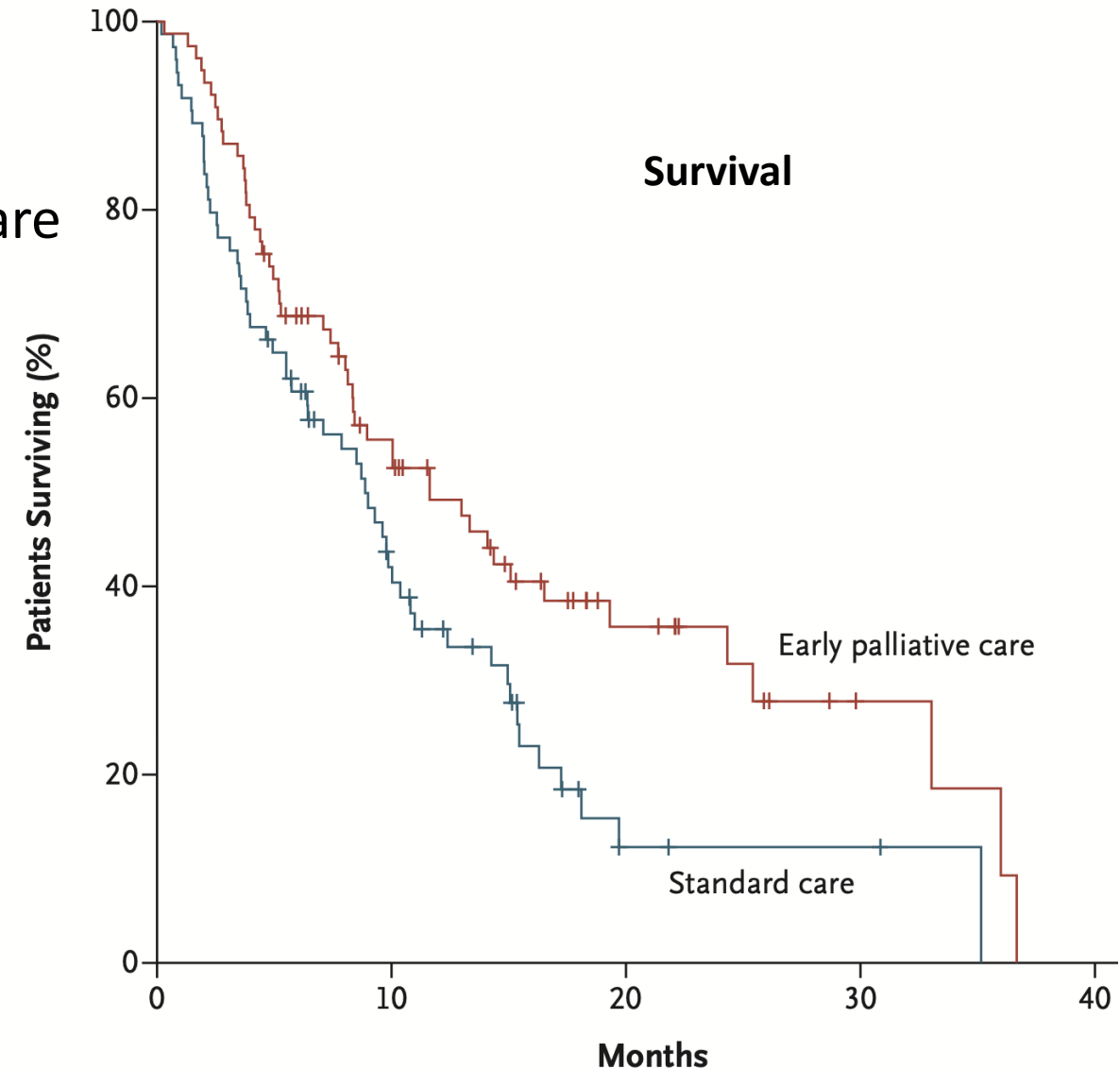
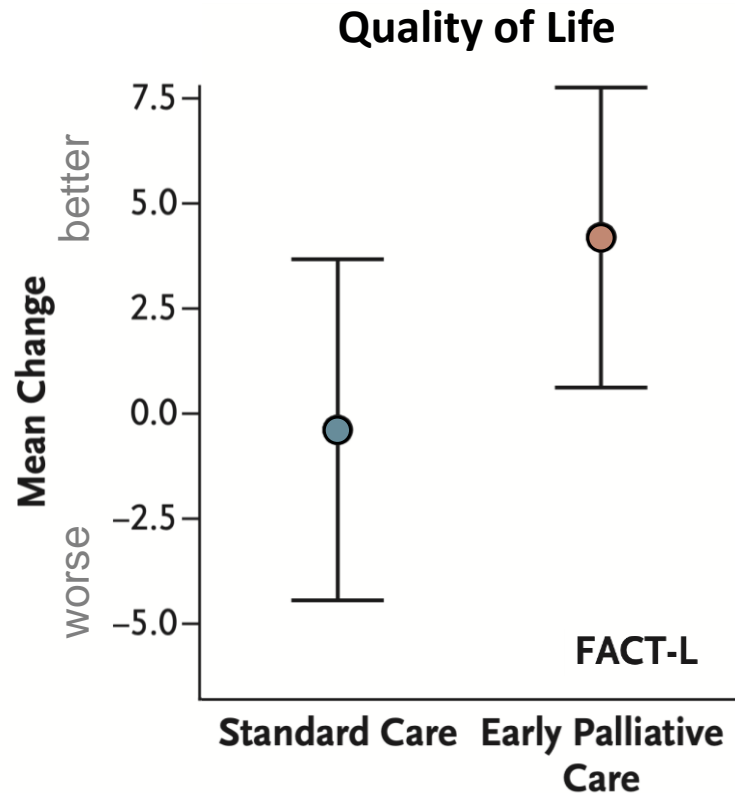


(Sort of) new  
concept!



# Early Palliative Care Improves Outcomes

- 151 patients
- New metastatic non-small cell lung cancer
- Early integrated palliative care vs standard of care





# Symptom Management: Practice Question 1

An 87-year-old man is admitted to the intensive care unit with septic shock, urinary tract infection, and acute renal failure after being found on the floor by his niece. Fluid resuscitation, vasopressor support, and antibiotics do not improve his clinical status. His goals of care shift to focus on comfort only. On exam, he is lethargic, unable to follow commands, and moaning. In addition to optimizing non-pharmacologic end-of-life care, you would like to start an opioid medication for pain. His niece tells you that he took codeine a year ago without issues.

What should you order for this patient?

- A. Morphine IV
- B. Codeine PO
- C. Fentanyl IV
- D. You should not order an opioid medication because he is already lethargic.





# Opioids Have Differing Safety in Liver or Renal Impairment

## Kidney Impairment:

Opioid Dosing in Renal Impairment					
Agent	Renal Impairment		Dialysis	Renal Excretion Percentage	Comments
	GFR 10 – 50 mL/min*	GFR < 10 mL/min*			
Codeine	Do not use				<b>Do Not Use</b>
Morphine	Reduce dose by 25 – 50% if used	Avoid use; reduce dose by 50 – 75% if necessary	Use cautiously  Dialyzable	~ 90%  Not recommended in ESRD due to accumulation of drug & metabolites	<b>Avoid Use</b> If must be used, monitor closely for side effects and neurotoxicity
HYDROmorphine	Reduce dose by 25 – 50% if used	Reduce dose by 50% if used; prolong dosage interval	Dialyzable	Hydromorphone: 75%	<b>Less Safe</b>
HYDROcodone	Reduce dose by 25 – 50% if used; prolong dosage interval	Reduce dose by 50% if used; prolong dosage interval	Use cautiously	Hydrocodone: 6.5%  Inactive metabolites may accumulate in renal insufficiency	<b>Less Safe</b> HY hydromorphone is commonly used in renal insufficiency in clinical practice  Side effects typically occur over prolonged exposure
OxyCODONE	Reduce dose by 50% if used	Use cautiously & prolong dosing interval	Use cautiously & prolong dosing interval Partially dialyzable	75 – 85%  ↓ excretion of metabolites & ↑ T ½ in uremia	<b>Less Safe</b> Insufficient evidence for safety in renal impairment
FentaNYL	May reduce dose by 25%	Reduce dose by 50%	Overall not dialyzable  May be dialyzable by some filters	75 %  No clinically active metabolites	<b>Most Safe</b>

## Liver Impairment:

Opioid Dosing in Hepatic Impairment				
Agent	Degree of Hepatic Impairment			Comments
	Mild	Moderate	Severe	
Codeine	Avoid use			<b>Avoid Use</b>
Morphine	Prolong dosage interval or reduce doses, titrate slowly		Avoid use	<b>Avoid Use</b> ↑ bioavailability, ↑ T ½, ↓ clearance
OxyCODONE	Reduce dose by 25-50% prolong dosage interval		Avoid use	<b>Less Safe</b> ↑ T ½, ↓ clearance Unpredictable serum levels
HYDROcodone	No adjustment required		Initiate at 50% dose	<b>Less Safe</b>
HYDROmorphine*	No adjustment required	Reduce dose by 25-50%	Reduce dose by 50%, prolong dosage interval	<b>Most Safe</b>
Methadone*	No adjustment required	No adjustment required	Avoid use – if needed, careful titration	<b>Safety considerations vary</b> Low 1 <sup>st</sup> pass metabolism → significant absorption from GI tract ↑ T ½, ↓ clearance
Buprenorphine	TD: Start with lowest dose (5 mcg/hr) SL: No adjustment required		TD: Avoid use SL: Reduce dose by 50%	<b>Less Safe</b> Acute hepatitis has been reported with buprenorphine
FentaNYL*	TD: Reduce dose by 50% IV bolus: No dose adjustments required		TD: Use with caution IV bolus: No dose adjustments required	<b>Most Safe via IV bolus</b> <b>Less Safe via IV infusion</b> IV infusion: ↑ T ½ due to lipophilicity & ↑ active drug due to decreased metabolism to inactive drug



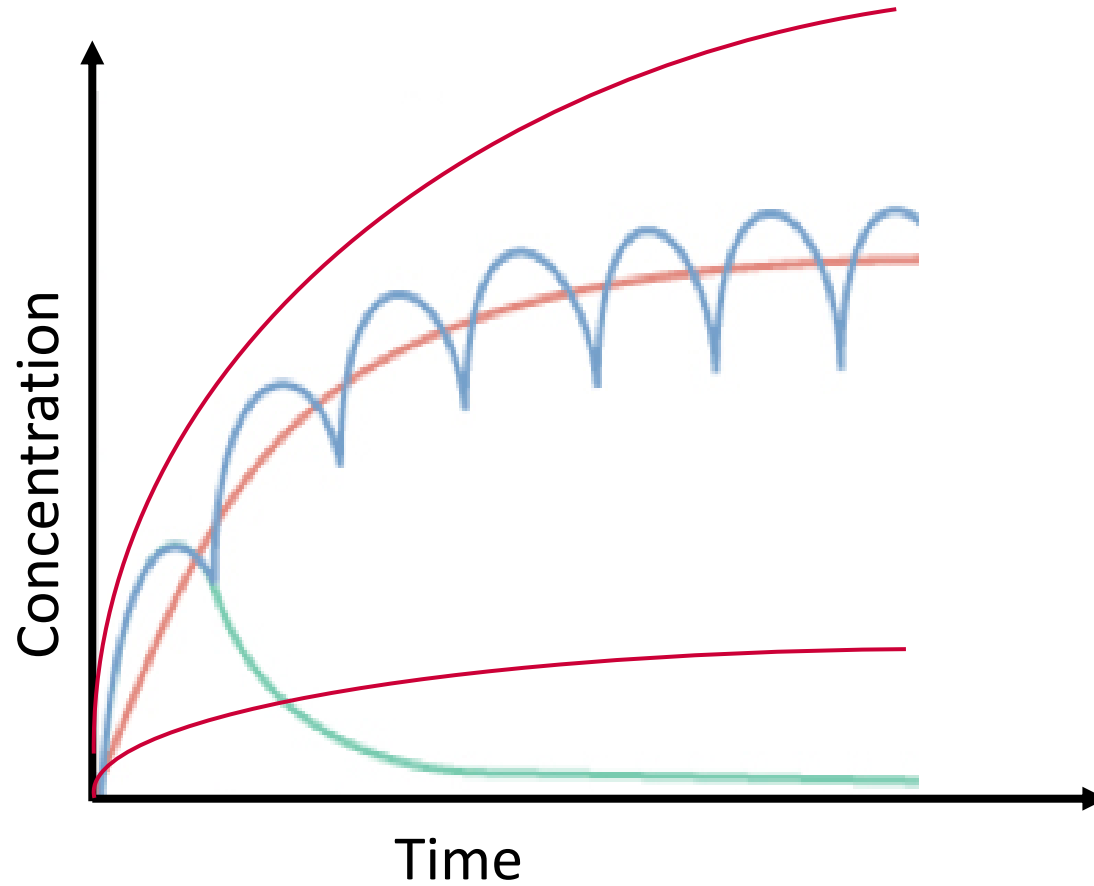
# Symptom Management: Practice Question 2

An 87-year-old man is admitted to the intensive care unit with septic shock, urinary tract infection, and acute renal failure after being found on the floor by his niece. Fluid resuscitation, vasopressor support, and antibiotics do not improve his clinical status. His goals of care shift to focus on comfort only. On exam, he is lethargic, unable to follow commands, and moaning. In addition to optimizing non-pharmacologic end-of-life care, you would like to start an opioid medication for pain. His niece tells you that he took codeine a year ago without issues. He is transferred out of the ICU for end-of-life care. The policy on his new unit does not allow IV fentanyl but allows IV hydromorphone or transdermal fentanyl.

Which of the following regimens is best for starting an opioid in this patient?

- A. Transdermal fentanyl, 12 mcg / hr patch
- B. IV continuous infusion hydromorphone, 1 mg / hr
- C. IV bolus hydromorphone, 2 mg every 3 hr as needed for signs of pain
- D. IV bolus hydromorphone, 0.5 mg every 20 min as needed for signs of pain

# IV Opioid Boluses Control Acute Pain Better Than A Continuous Infusion



# Symptom Management: Start with PRN in nearly all cases

- Pain / Agitation\*

Mild → Acetaminophen (unless liver failure), often scheduled Q8h

Severe → Opioid, start with PRN based on symptoms

Once you have 'use data' → add a scheduled regimen that is ~2/3 of the total PRN use

- Anxiety / Agitation\* → anxiolytic (often benzodiazepines)
- Delirium / Agitation\* → antipsychotic (i.e. haloperidol)
- Secretions → anti-muscarinic (i.e. glycopyrrolate, scopolamine)



\* Sometimes it's hard to know what is causing agitation!

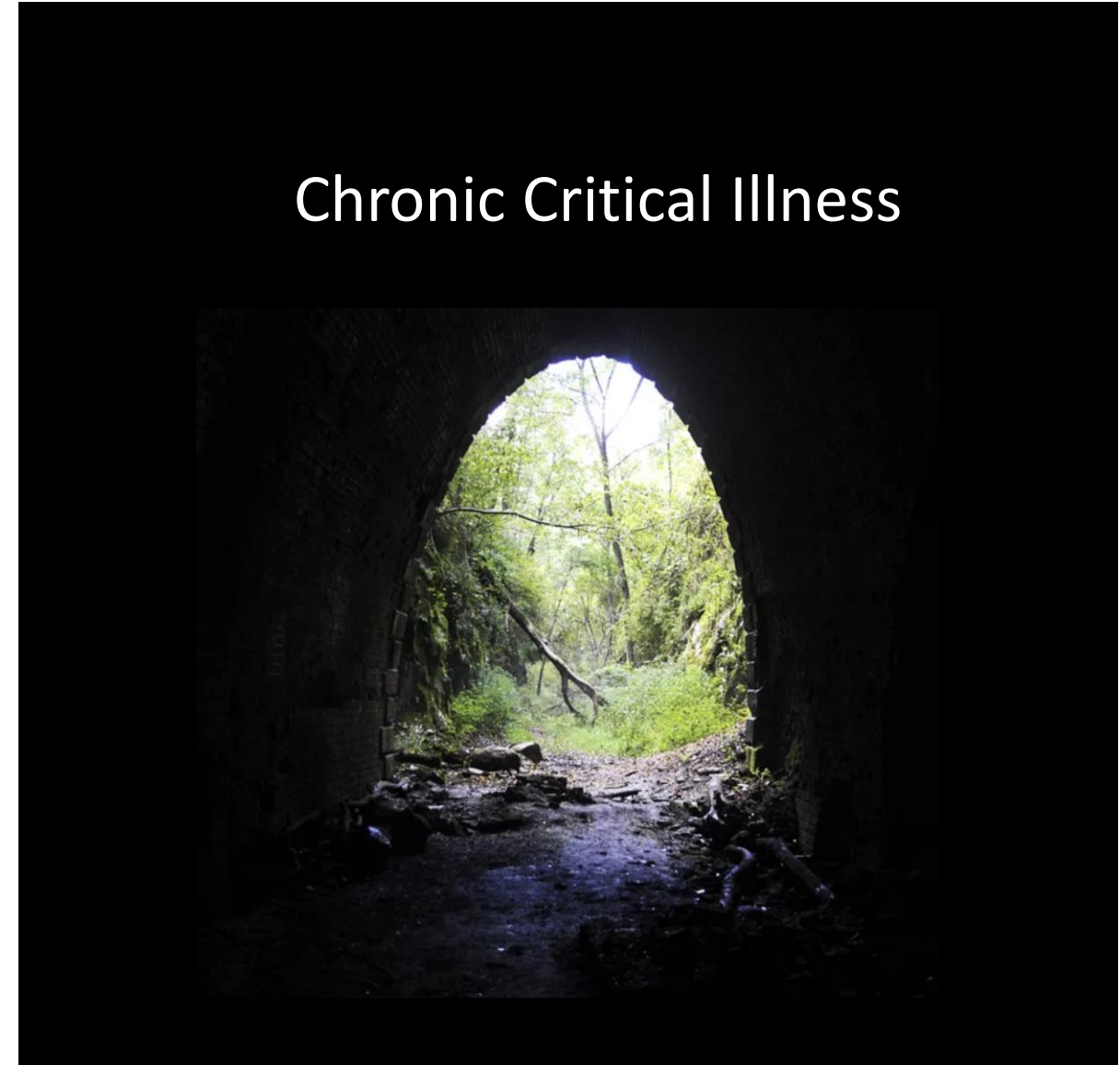
# Communication: Practice Question 3

A 65-year-old woman with end-stage kidney disease, peripheral artery disease, diabetes and emphysema is admitted to the intensive care unit for sepsis and acute respiratory failure due to left leg cellulitis and aspiration. After 14 days of intubation, she has not liberated from the ventilator or weaned off sedation. She had not previously stated her preferences about tracheostomy or prolonged mechanical ventilation. Her husband, who is her legal healthcare proxy, does not know what to decide. What is the next best step?

- A. Proceed with tracheostomy as an emergency treatment to see if the patient can regain decisional capacity off sedation.
- B. If the husband is uncomfortable with the decision, see if there is a different person who can make the decision about tracheostomy.
- C. Ask the husband what is important to the patient and make a recommendation about tracheostomy based on those values, providing an opportunity for the husband to decline your recommendation.
- D. Consult the hospital ethics team.

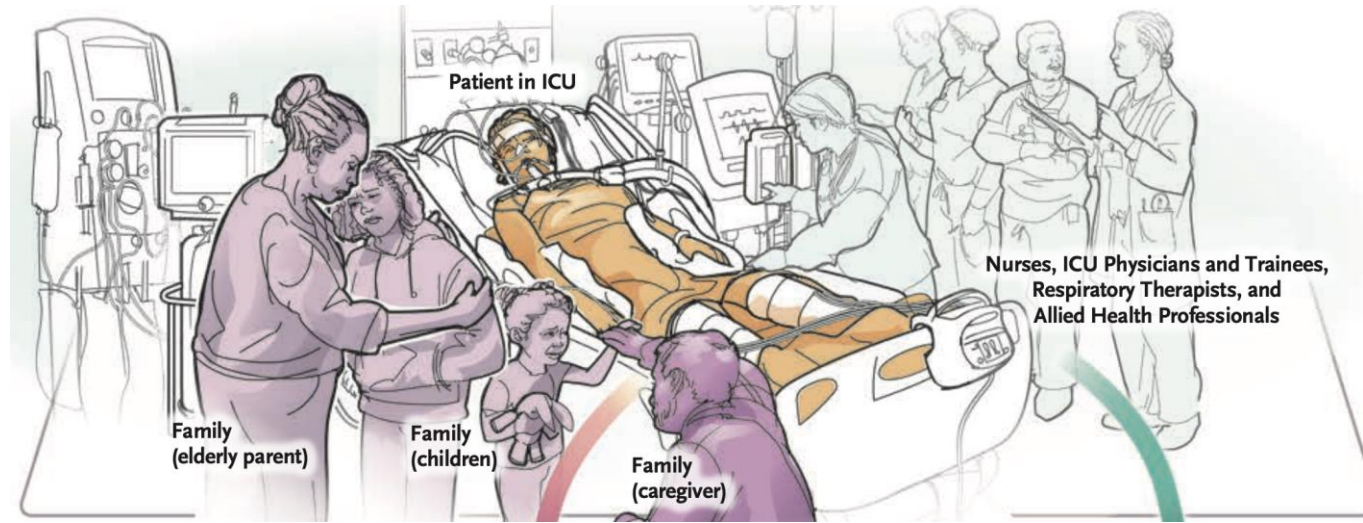


# Perspective Matters



Photographs of the Blue Ridge Tunnel, Virginia

# Challenges to discussing the 'big picture' in the ICU



Anxiety / Stress / PTSD  
Setbacks & Recoveries  
'Positive Thinking'  
Decision-Making Trauma  
Prior discussions

– what's different now?

Active Symptoms  
Ambivalence  
History of survival

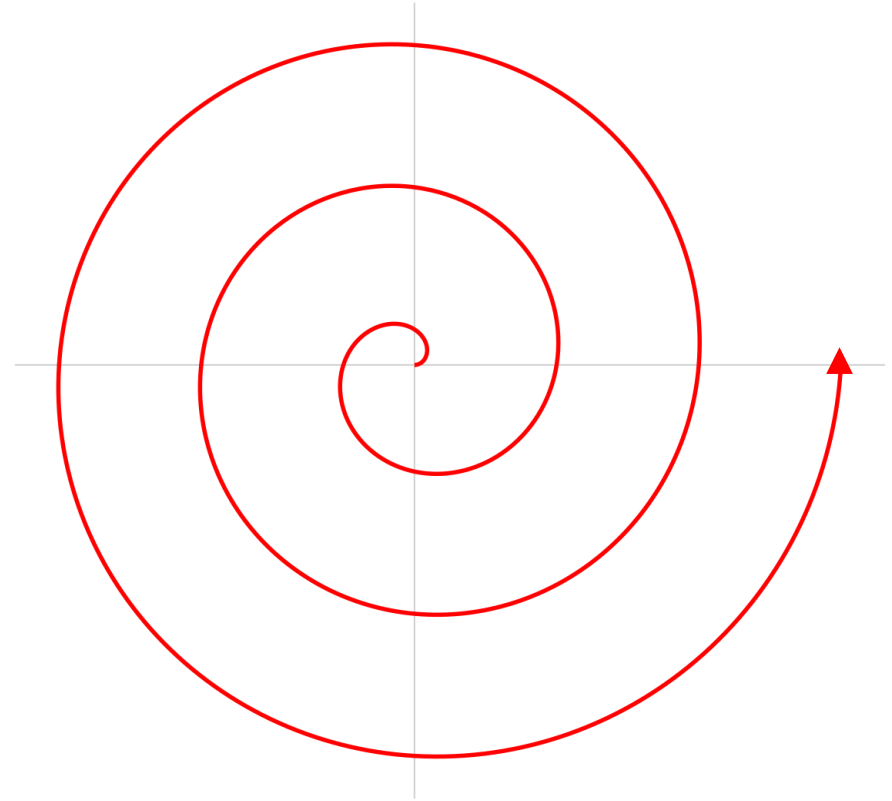
Varied trajectories  
Subjectivity  
Structural Racism  
Therapeutic Nihilism  
Moral Distress





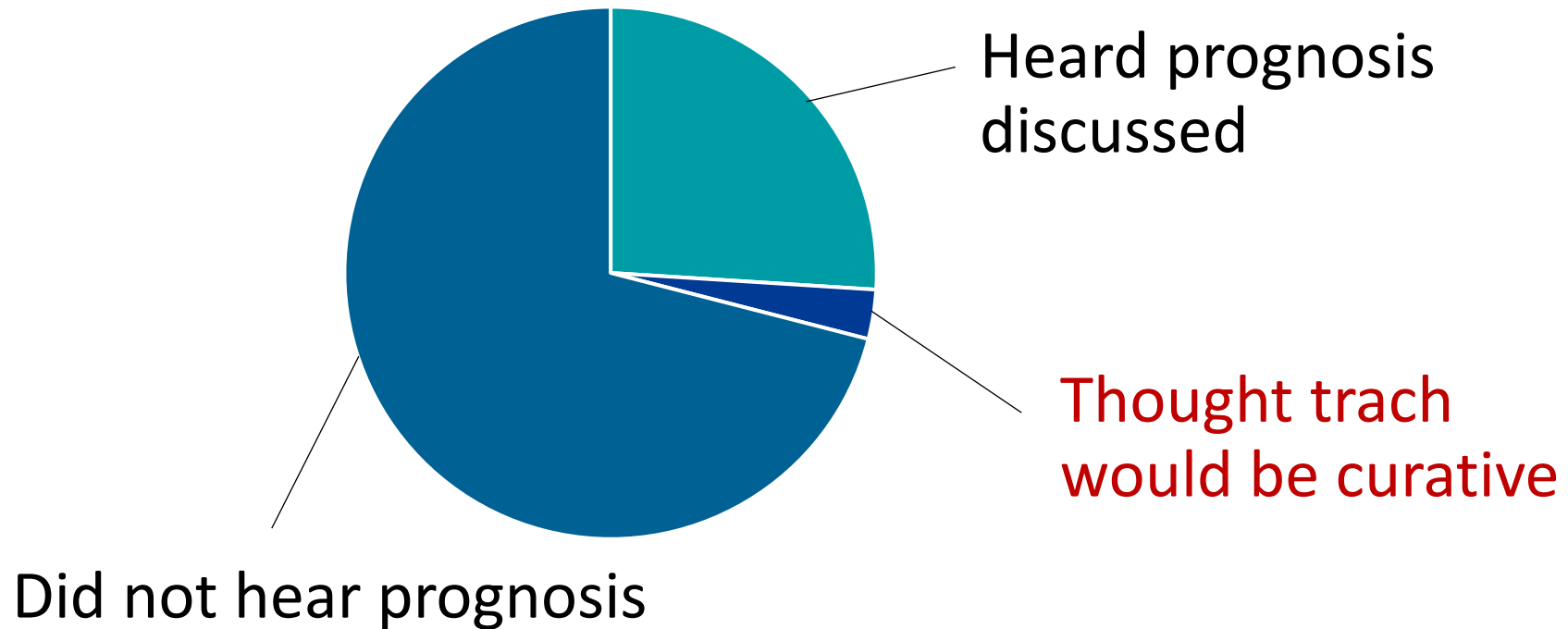
# Palliative Care Techniques: Communication

- Assess Understanding
- Understand Goals & Values
- Align Hope
- Check our biases
- Offer Information
- Titrate Shared Decision-Making

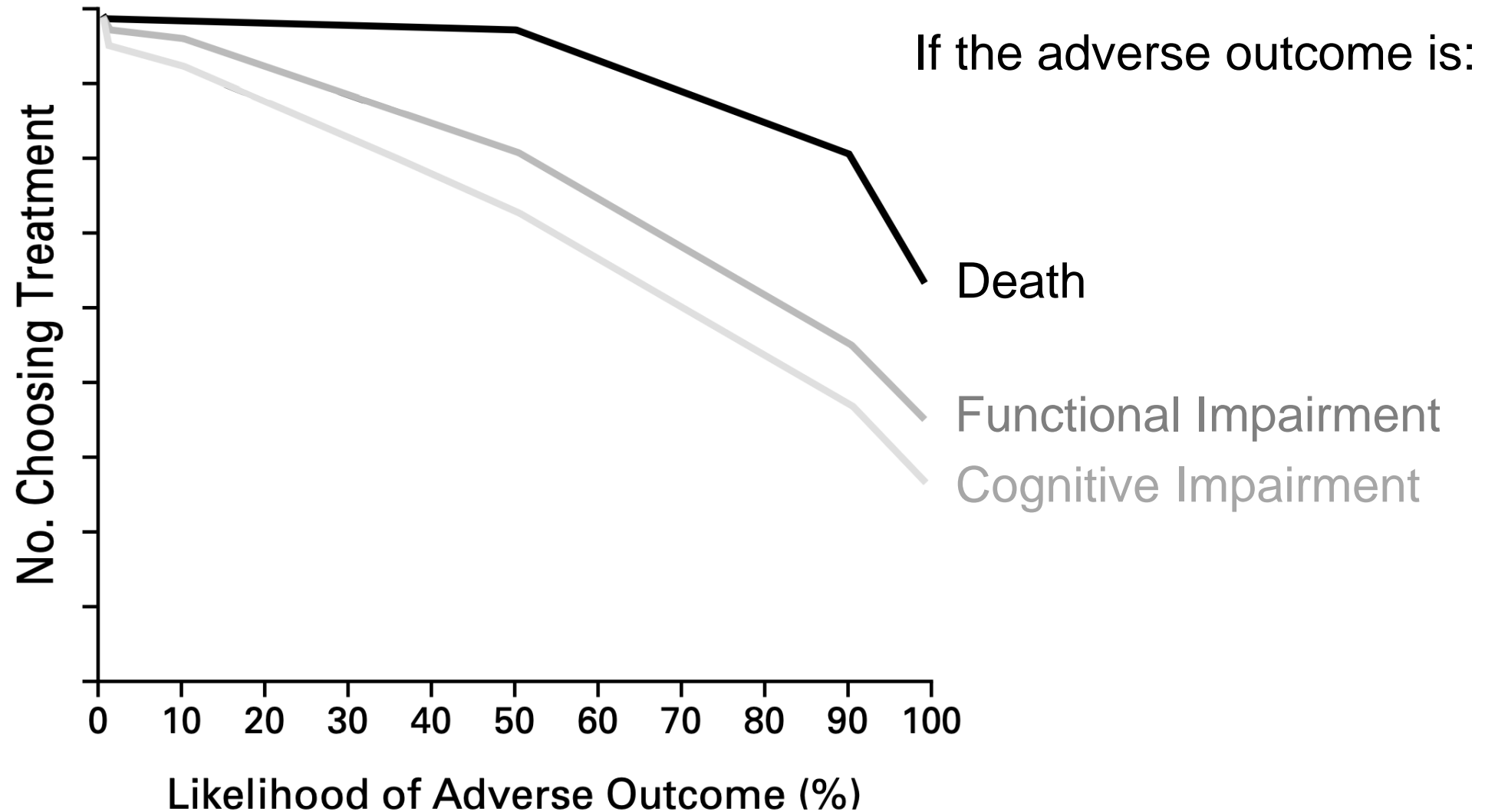


# Assess Understanding: “What have you heard so far?”

Surrogates of 126 ICU patients at time of trach

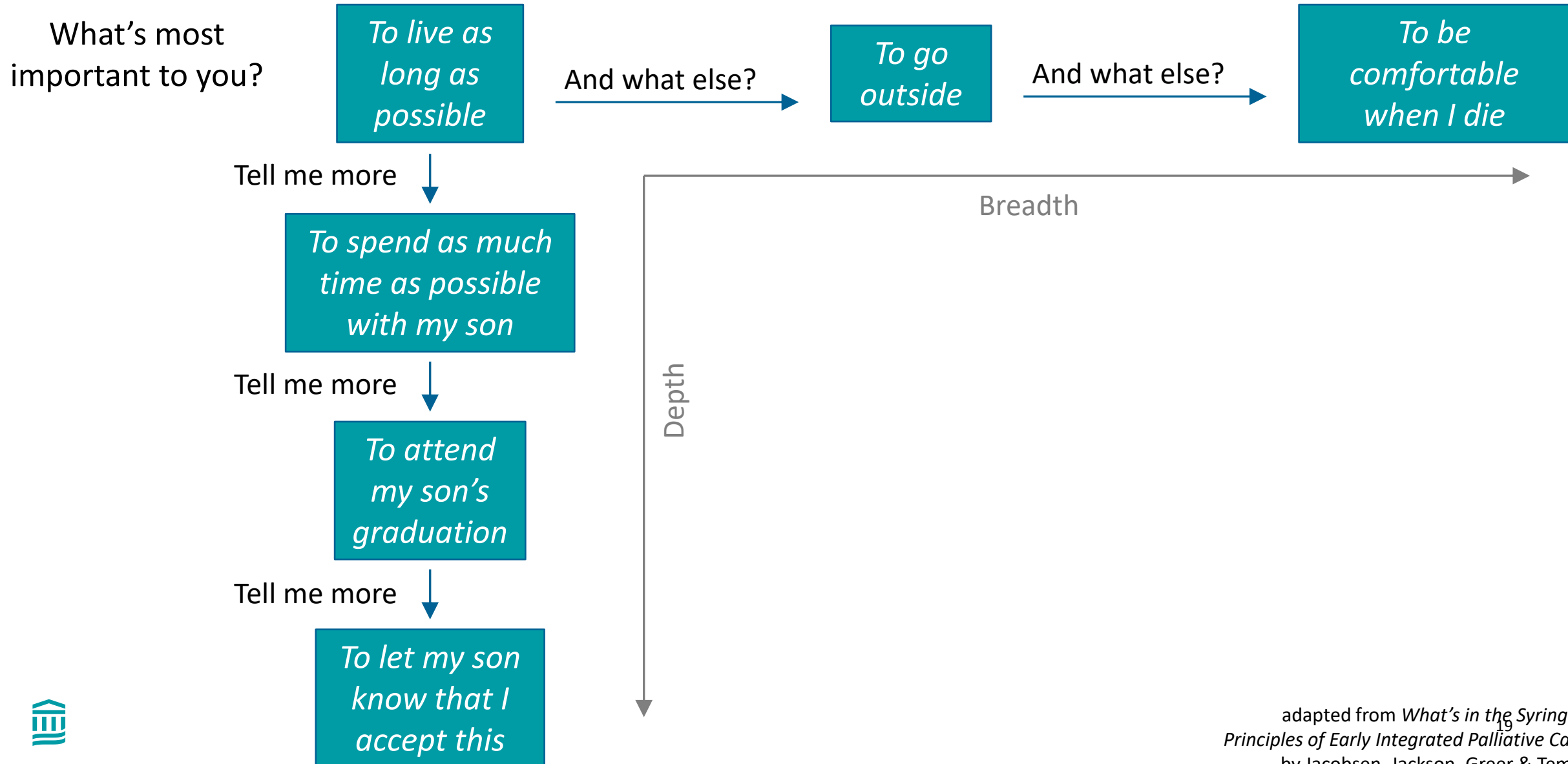


# Understand (& Document!) Goals & Values



# Tell Me More ...

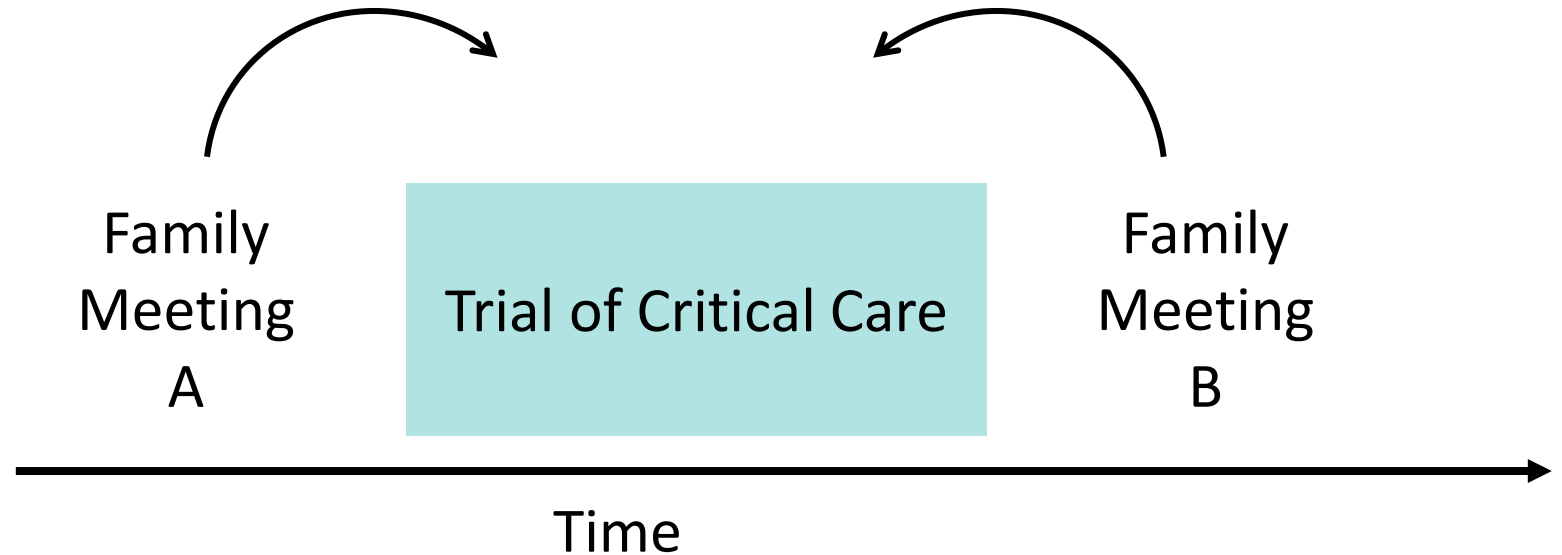
# ... And What Else?



# Align Hope

## Communication

- “I hope / I wish”
- “I worry”

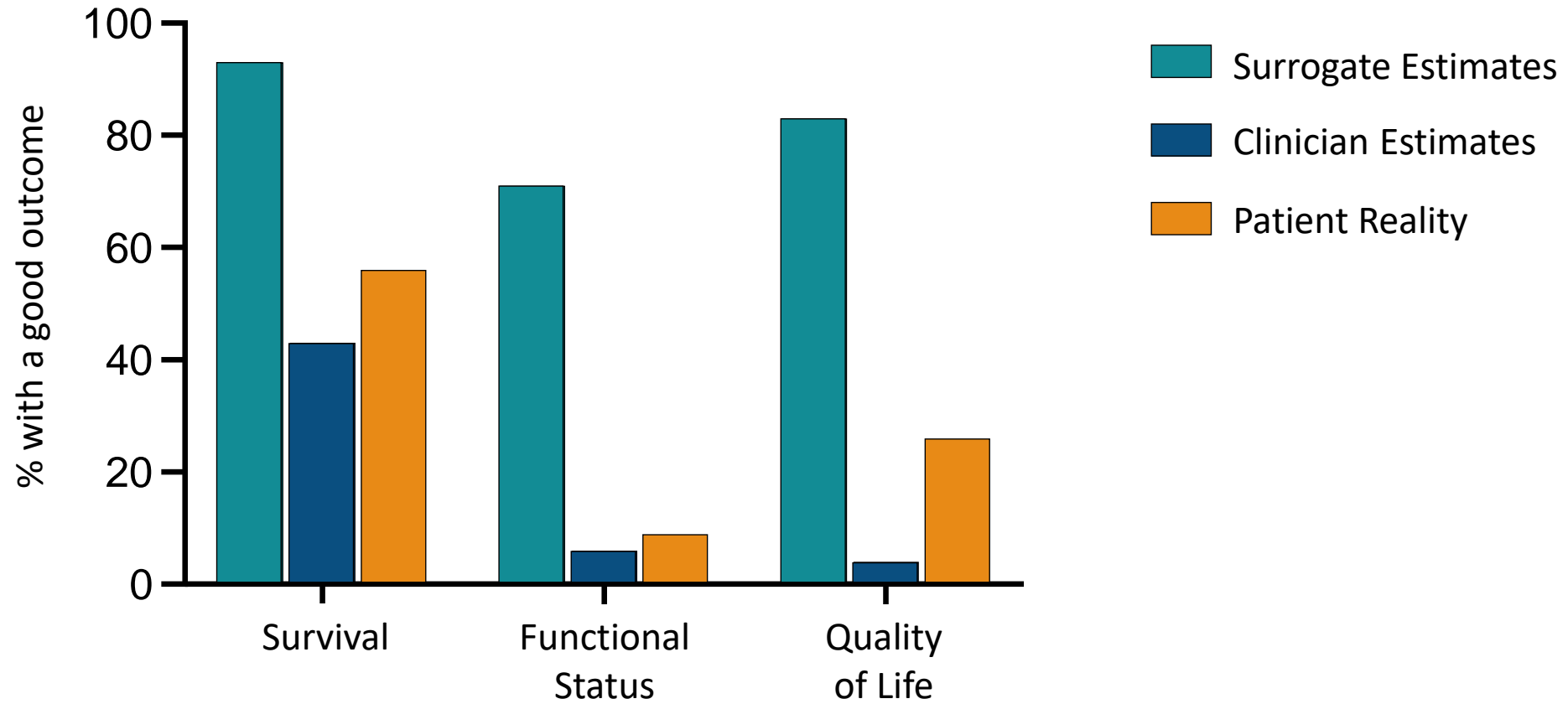


## Time-Limited Trial

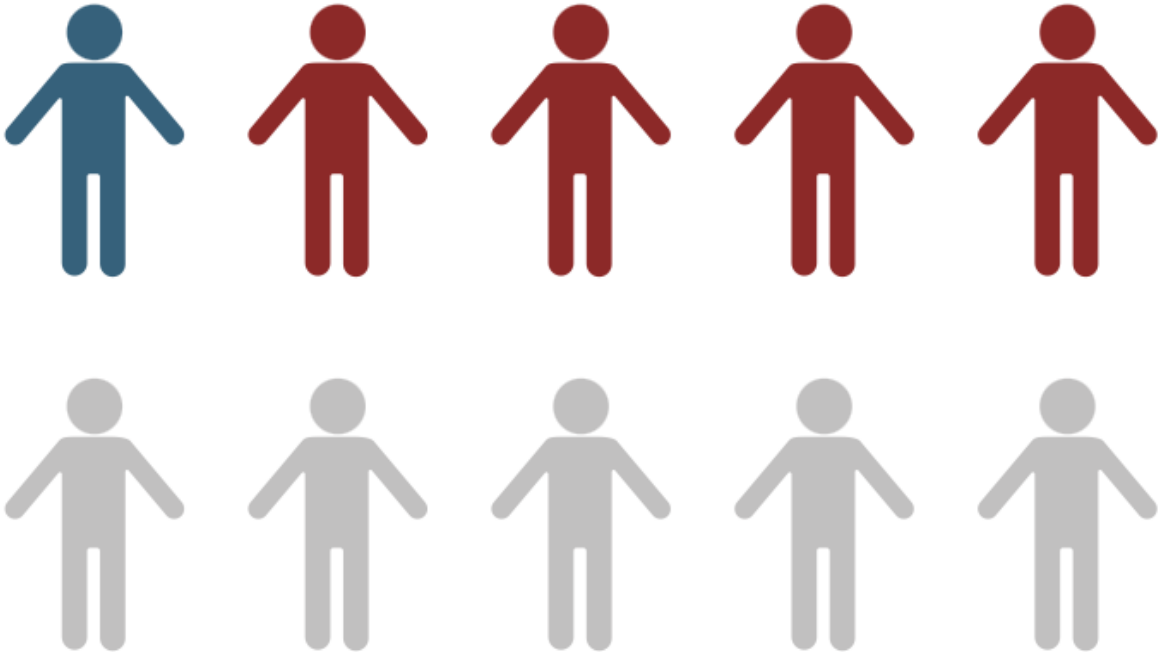
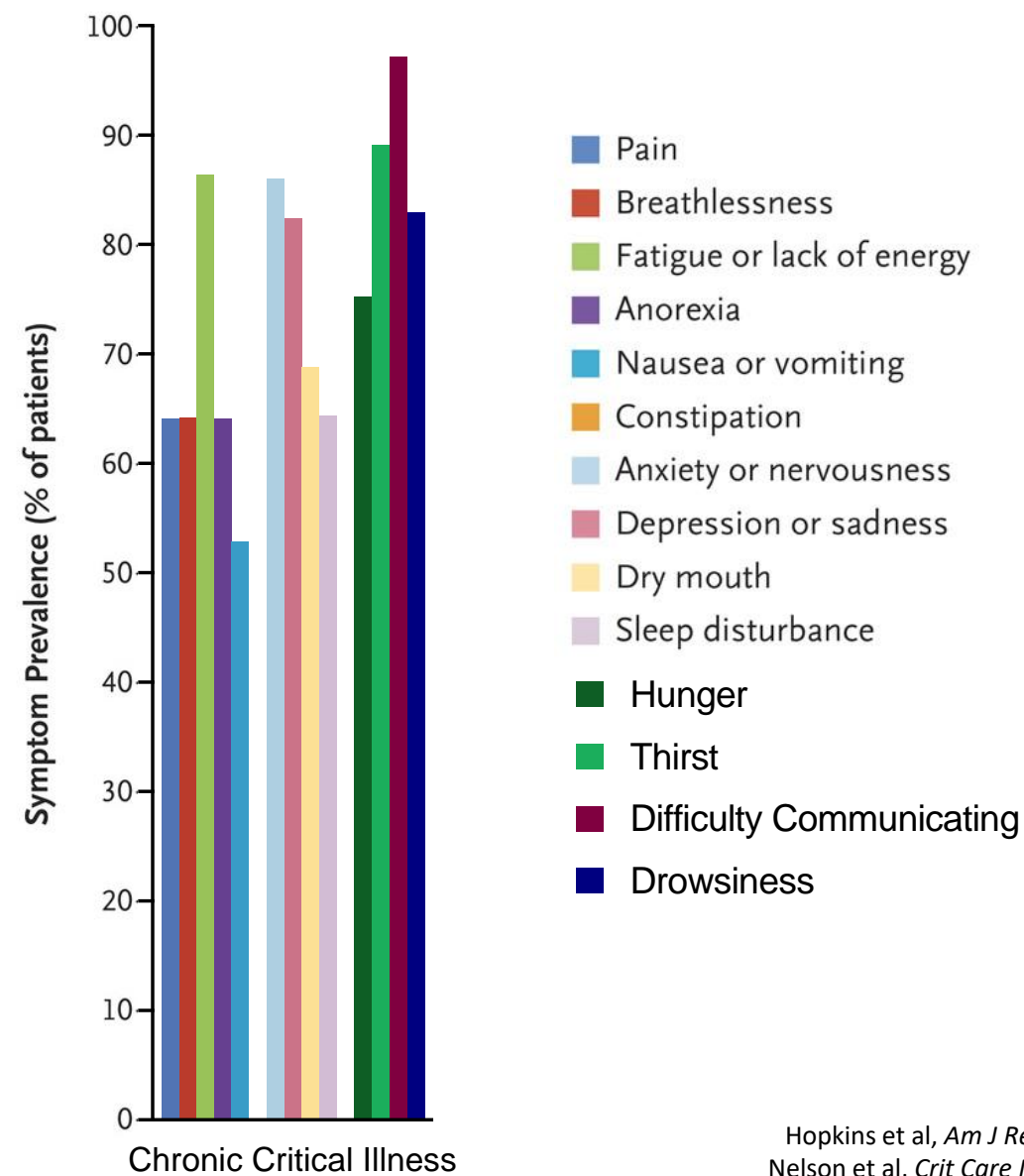
- Prospective
- Describe what improvement would look like
- Follow up



# Check our biases



# Offer Information to Patients & Surrogates



Graphical overview of collated data from  
Hopkins et al, *Am J Respir Crit Care Med* 1999; Enogren et al, *Chest* 2004; Lamas, *Crit Care Med* 2017; Kelley & Morrison, *New Engl J Med* 2015;  
Nelson et al, *Crit Care Med* 2004 Mehta et al, *Crit Care Med* 2019; Law et al, *Ann Am Thorac Soc.* 2022; Herridge & Azoulay *New Engl J Med* 2023



# Titrate Shared Decision-Making

complete  
paternalism

unburdening  
surrogates from  
'giving up'

amplifying the  
patient's voice

"à la carte"  
menu



autonomy  
in goals of care  
discussions



# Unburden Surrogates

1. Open the conversation
2. Assess Understanding
3. Share hope/worry
4. Align
5. Understand goals & values
6. Ask permission
7. Make a recommendation

## Open the conversation

"I'd like to talk about what is ahead with your illness. Would that be ok?"

## Assess prognostic awareness

"What is your **understanding** of your illness?"

"Looking to the future, what are your **hopes** about your health?" "What are your **worries**?"

## Share hope and worry

"Would it be ok if we talked more about what lies ahead?"

Function: "I hear you're **hoping** for \_\_\_\_\_ and I **worry** the decline we've seen is going to continue."

Time: "I hear you're **hoping** for \_\_\_\_\_ and I **worry** something serious may happen in the next few (wks/mths/yrs)."

## Align

"I **wish** we didn't have to worry about this."

## Explore what's important

"If your health worsens, what is most important to you?"

"How much do your family or friends know about your priorities and wishes?"

## Close the conversation

"It sounds like \_\_\_\_\_ is very important to you."

"Given what's important to you, I would recommend..."



# Take-Home Points

- Palliative Care is specialized medical care for patients with serious illness, at any stage of illness, to improve quality of life by reducing symptoms and stress of illness. It can improve outcomes!
- Symptom management includes careful selection of medication, route, dose, and frequency – all adjusted for the patient's organ failure(s) – and most commonly starts with frequent PRN dosing
- Palliative Care communication includes:
  - Assess Understanding
  - Understand Goals & Values
  - Align Hope
  - Check our biases
  - Offer Information
  - Titrate Shared Decision-Making
  - Improve Post-ICU Support



# References

- Azoulay E, *et al.* Risk of post-traumatic stress symptoms in family members of intensive care unit patients. *Am J Respir Crit Care Med.* 2005 May 1;171(9):987-94. doi: 10.1164/rccm.200409-1295OC. Epub 2005 Jan 21. PMID: 15665319.
- Bekelman DB, Feser W, Morgan B, Welsh CH, Parsons EC, Paden G, Baron A, Hattler B, McBryde C, Cheng A, Lange AV, Au DH. Nurse and Social Worker Palliative Telecare Team and Quality of Life in Patients With COPD, Heart Failure, or Interstitial Lung Disease: The ADAPT Randomized Clinical Trial. *JAMA.* 2024 Jan 16;331(3):212-223. doi: 10.1001/jama.2023.24035. PMID: 38227034; PMCID: PMC10792473.
- Carson et al. A prognostic model for one-year mortality in patients requiring prolonged mechanical ventilation. *Crit Care Med.* 2008 Jul;36(7):2061-9.
- Carson, S. S. *et al.* Effect of Palliative Care-Led Meetings for Families of Patients With Chronic Critical Illness: A Randomized Clinical Trial. *JAMA* **316**, 51-62, doi:10.1001/jama.2016.8474 (2016).
- Cox, C. E. *et al.* Expectations and outcomes of prolonged mechanical ventilation. *Crit Care Med* **37**, 2888-2894; quiz 2904, doi:10.1097/CCM.0b013e3181ab86ed (2009).
- Curtis JR. Palliative and end-of-life care for patients with severe COPD. *Eur Respir J.* 2008 Sep;32(3):796-803. doi: 10.1183/09031936.00126107. Epub 2007 Nov 7. PMID: 17989116.
- Engoren et al. Hospital and long-term outcome after tracheostomy for respiratory failure. *Chest* 2004; 125:220-227
- Fried et al. Understanding the Treatment Preferences of Seriously Ill Patients. *New Engl J Med* 2002; 346:1061-6
- Guo H, et al. "How Long Have I Got?" in Stage IV NSCLC Patients With at Least 3 Months Up to 10 Years Survival, Accuracy of Long-, Intermediate-, and Short-Term Survival Prediction Is Not Good Enough to Answer This Question. *Front Oncol.* 2021 Dec 21;11:761042. doi: 10.3389/fonc.2021.761042. PMID: 34993132; PMCID: PMC8724440.
- Herridge MS, Azoulay É. Outcomes after Critical Illness. *N Engl J Med.* 2023 Mar 9;388(10):913-924. doi: 10.1056/NEJMra2104669. PMID: 36884324.
- Hopkins, R.O. et al. Neuropsychological sequelae and impaired health status in survivors of severe acute respiratory distress syndrome. *Am J Respir Crit Care Med* 1999; 160: 50-6.
- Jacobsen, Jackson, Greeg & Temel. *What's in the Syringe? Principles of Early Integrated Palliative Care.* Oxford University Press 2021
- Kahn, J. M., Benson, N. M., Appleby, D., Carson, S. S. & Iwashyna, T. J. Long-term acute care hospital utilization after critical illness. *JAMA* **303**, 2253-2259, doi:10.1001/jama.2010.761 (2010)
- Kelley A.S. & Morrison R.S. Palliative Care for the Seriously Ill. *N Engl J Med* **373**, 747-55, (2015).
- Kruser et al. "Best Case / Worst Case" *J Am Geriatr Soc.* 2015;63(9):1805-11.
- Lamas, D. J. *et al.* Opening the Door: The Experience of Chronic Critical Illness in a Long-Term Acute Care Hospital. *Crit Care Med* **45**, e357-e362, doi:10.1097/CCM.0000000000002094 (2017).
- Law A.C. et al. Days out of Institution after Tracheostomy and Gastrostomy Placement in Critically Ill Older Adults. *Ann Am Thorac Soc.* 2022 Mar;19(3):424-432.
- Leroy G, Devos P, Lambiotte F, Thévenin D, Leroy O. One-year mortality in patients requiring prolonged mechanical ventilation: multicenter evaluation of the ProVent score. *Crit Care.* 2014 Jul 18;18(4):R155. doi: 10.1186/cc13994. PMID: 25037939; PMCID: PMC4223371.
- Nelson, J. E. *et al.* The symptom burden of chronic critical illness. *Crit Care Med* **32**, 1527-1534, doi:10.1097/01.ccm.0000129485.08835.5a (2004).
- Nelson, J. E., Cox, C. E., Hope, A. A. & Carson, S. S. Chronic critical illness. *Am J Respir Crit Care Med* **182**, 446-454, doi:10.1164/rccm.201002-0210CI (2010).
- Neo J, Fettes L, Gao W, Higginson IJ, Maddocks M. Disability in activities of daily living among adults with cancer: A systematic review and meta-analysis. *Cancer Treat Rev.* 2017 Dec;61:94-106. doi: 10.1016/j.ctrv.2017.10.006. Epub 2017 Oct 28. PMID: 29125982.
- Temel, J. S. *et al.* Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med* **363**, 733-742, doi:10.1056/NEJMoa1000678 (2010).
- Turcotte L.A., *et al.* Baseline Frailty as a Predictor of Survival After Critical Care: A Retrospective Cohort Study of Older Adults Receiving Home Care in Ontario, Canada. *Chest.* 2021 Dec;160(6):2101-2111. doi: 10.1016/j.chest.2021.06.009. Epub 2021 Jun 15. PMID: 34139208.
- Sumarsono, N. *et al.* Availability of Palliative Care in Long-Term Acute Care Hospitals. *J Am Med Dir Assoc* **22**, 2207-2211, doi:10.1016/j.jamda.2021.04.007 (2021).
- Zheng H. Intravenous Infusion. In: Shargel L, Yu AC. eds. *Applied Biopharmaceutics & Pharmacokinetics*, 7e. McGraw Hill; 2016.

# Additional Slides

---



# Adjust Dose and Frequency Separately

- Dose affects peak concentration
  - Was there *any* effect from the dose? Too much?
- Frequency of dosing depends on duration of effect
  - How long did the effect last?



### Opioid Dosing in Renal Impairment

- The degree to which renal impairment affects analgesia, side effects, and toxicity of opioids is not well understood due to the lack of sufficient evidence.
- Glomerular filtration rate (GFR) recommendations have been provided to correlate with literature; however, creatinine clearance (CrCl) should also be assessed for dose adjustments.

Opioid Dosing in Renal Impairment					
Agent	Renal Impairment		Dialysis	Renal Excretion Percentage	Comments
	GFR 10 – 50 mL/min*	GFR < 10 mL/min*			
Codeine	Do not use				<b>Do Not Use</b>
Morphine	Reduce dose by 25 – 50% if used	Avoid use; reduce dose by 50 – 75% if necessary	Use cautiously  Dialyzable	~ 90%  Not recommended in ESRD due to accumulation of drug & metabolites	<b>Avoid Use</b> If must be used, monitor closely for side effects and neurotoxicity
HYDROmorphine HYDROcodone	Reduce dose by 25 – 50% if used; prolong dosage interval	Reduce dose by 50% if used; prolong dosage interval	Dialyzable  Use cautiously	Hydromorphone: 75%  Hydrocodone: 6.5%  Inactive metabolites may accumulate in renal insufficiency	<b>Less Safe</b> IV hydromorphone is <b>commonly used</b> in renal insufficiency in clinical practice  Side effects typically occur over prolonged exposure
OxyCODONE	Reduce dose by 50% if used	Use cautiously & prolong dosing interval	Use cautiously & prolong dosing interval  Partially dialyzable	75 – 85%  ↓ excretion of metabolites & ↑ T ½ in uremia	<b>Less Safe</b>  Insufficient evidence for safety in renal impairment
FentaNYL	May reduce dose by 25%	Reduce dose by 50%	Overall not dialyzable  May be dialyzable by some filters	75 %  No clinically active metabolites	<b>Most Safe</b>
Meperidine	Do not use (see <a href="#">page 6</a> )				<b>Do Not Use</b>
Methadone	Dose reduction may be required alongside clinical assessment.		Not dialyzable	21% as unmetabolized  No clinically active metabolites	<b>Safety considerations vary</b> Methadone is commonly used in renal insufficiency in clinical practice
Buprenorphine	Insufficient evidence for recommendations in renal insufficiency		Not dialyzable	27 – 30%	<b>Less Safe</b> Eliminated through the biliary system
Tapentadol	No dose adjustment	Do not use	Partially dialyzable		<b>Less Safe</b>
TraMADol	Reduce initial dose; prolong dosage interval to Q12H; max 200 mg/day	Do not use in GFR < 30 mL/min	7% of drug and active metabolite removed by dialysis	90% (30% as unmetabolized)  ↑ T ½ in renal insufficiency	<b>Less Safe</b> Do not use long-acting tramadol  Risk for seizures high with ↑↑ uremia & drugs that ↓ seizure threshold

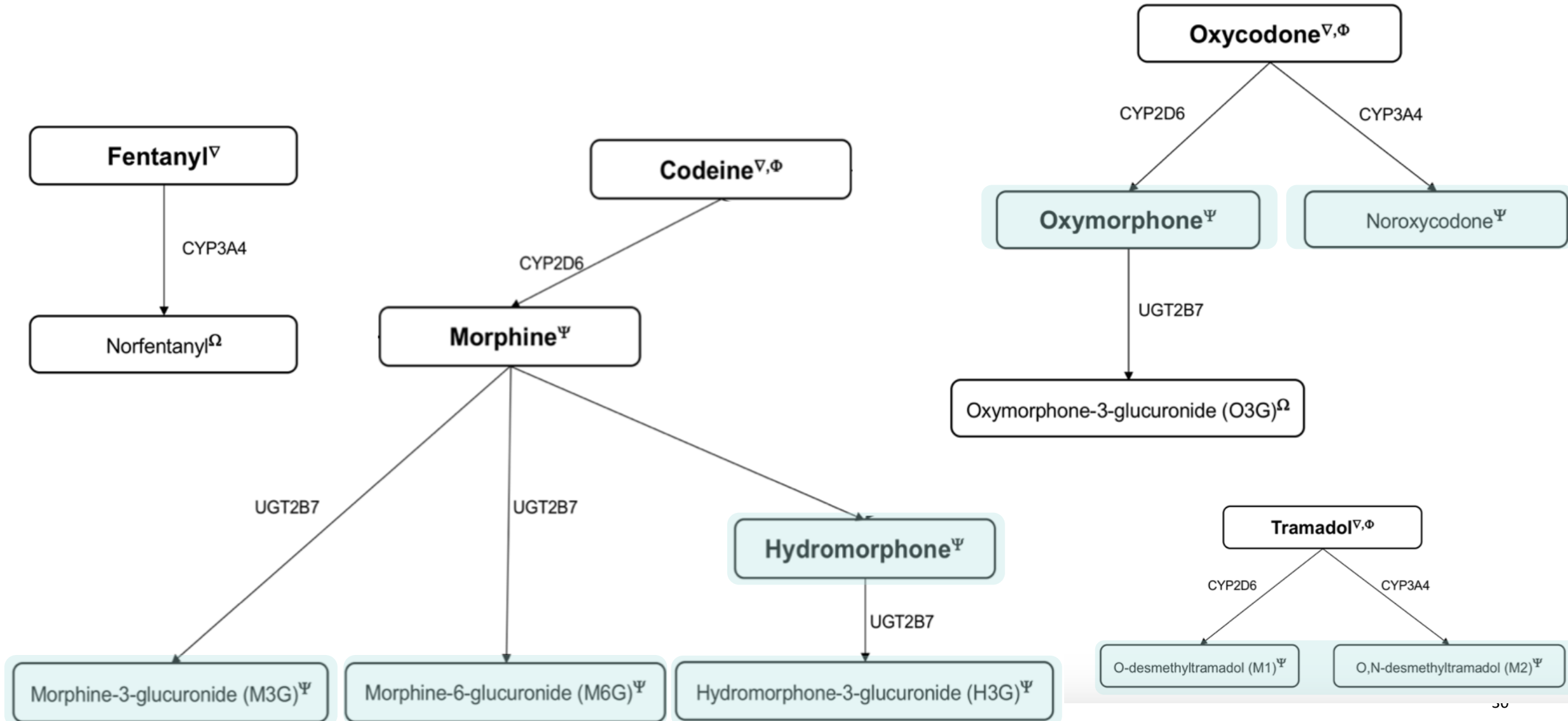
\*Glomerular filtration rate (GFR) recommendation interpretation should be coupled with evaluating the degree and duration of renal dysfunction, such as AKI, CKD, vs. acute on chronic CKD.

Opioid Dosing in Hepatic Impairment				
Agent	Degree of Hepatic Impairment			Comments
	Mild	Moderate	Severe	
Codeine	Avoid use			<b>Avoid Use</b>
Morphine	Prolong dosage interval or reduce doses, titrate slowly		Avoid use	<b>Avoid Use</b> ↑ bioavailability, ↑ T ½, ↓ clearance
OxyCODONE	Reduce dose by 25-50%, prolong dosage interval		Avoid use	<b>Less Safe</b> ↑ T ½, ↓ clearance Unpredictable serum levels
HYDROcodone	No adjustment required		Initiate at 50% dose	<b>Less Safe</b>
HYDROmorphine*	No adjustment required	Reduce dose by 25-50%	Reduce dose by 50%, prolong dosage interval	<b>Most Safe</b>
Methadone*	No adjustment required	No adjustment required	Avoid use – if needed, careful titration	<b>Safety considerations vary</b> Low 1 <sup>st</sup> pass metabolism → significant absorption from GI tract ↑ T ½, ↓ clearance
Buprenorphine	TD: Start with lowest dose (5 mcg/hr) SL: No adjustment required		TD: Avoid use SL: Reduce dose by 50%	<b>Less Safe</b> Acute hepatitis has been reported with buprenorphine
FentaNYL*	TD: Reduce dose by 50% IV bolus: No dose adjustments required		TD: Use with caution IV bolus: No dose adjustments required	<b>Most Safe via IV bolus</b> <b>Less Safe via IV infusion</b> IV infusion: ↑ T ½ due to lipophilicity & ↑ active drug due to decreased metabolism to inactive drug
Meperidine*	Do not use (see <a href="#">page #6</a> )			<b>Do Not Use</b>
Tapentadol	No adjustment required	Reduce doses	Avoid use	<b>Less Safe</b> Extensive 1 <sup>st</sup> pass metabolism (32% bioavailability)
TraMADol	Prolong dosage interval to Q12H		Avoid long-acting tramadol	<b>Less Safe</b> 3.2-fold ↑ AUC, 2.6-fold ↑ T ½

\* Heavily protein bound (>70%); serum levels may be increased in low albumin states.



# Beware of Active Opioid Metabolites That Are Not Cleared



# Unburden Surrogates

