Table S1: Examples of how measuring goal concordance could be used in research

1. Calculating cumulative incidence

- No. of preference sensitive treatments this month **= 48**
- No. of treatments rated as goal discordant = **15**

→ (15/48) × 100 = **32.3** discordant treatments per 100 preference-sensitive interventions
95% CI = (19.1 - 46.4)

Note: If patients receive multiple preference-sensitive treatments, observations are not independent and statistics should account for correlation within patients.

2. Calculating intervention-specific rates

Research team identifies 4 preference-sensitive interventions of interest. Based on results at right, they decide to focused their intervention on tracheostomies and endoscopy.

	Long–term dialysis catheter (N = 22)	Tracheostomy (N = 19)	Endoscopy (N = 39)	Suprapubic urinary catheter (N = 6)
Discordant treatments per 100 performed (95% CI) →	9 (2—31)	47 (25—71)	26 (14—42)	33 (6—76)

3. Assessing goal-concordance to tailor interventions

It may be difficult for **ICU A** to increase goal-concordance since some proxies will always set unachievable goals or be unsure of treatment limitations.

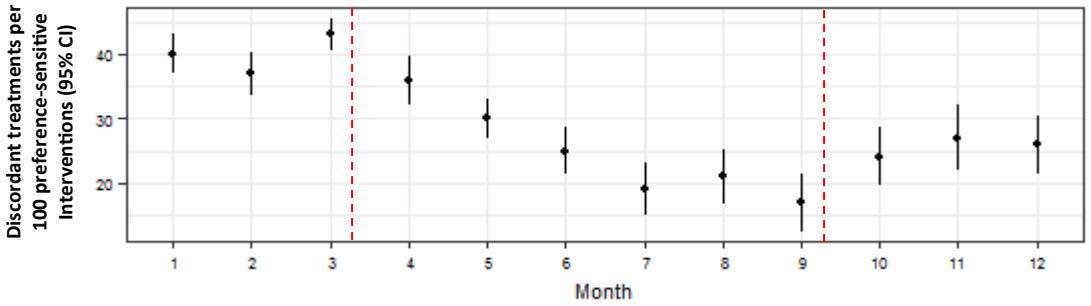
In **ICU B**, most goals are potentially achievable, but there are many uncertain proxies. Consider a facilitated values history[a] intervention.

In **ICU C**, an intervention to help physicians communicate prognosis may be the best approach to improving the rate of goal-concordant care given the sizable percentage patients and proxies naming unachievable goals. Investigating the source of treatment limitation violations is also advised.

Preference-sensitive interventions January—June	**ICU A** N = 212	**ICU B** N = 303	**ICU C** N = 174
Goal—concordant	65%	55%	38%
Goal unachievable at time of intervention	10%	7%	25%
Proxy unsure of goal or treatment limitations	10%	23%	3%
Treatment will not help achieve the patient's goal	2%	2%	5%
Treatment limitation violated	1%	3%	9%
Patient lacks capacity, no proxy identified	12%	10%	20%

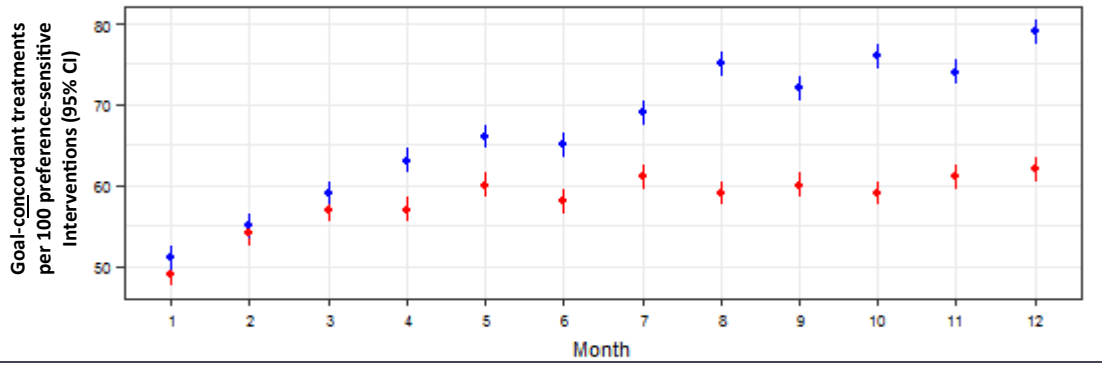
4. Longitudinal assessment during an intervention

A research team tracks the incidence of goal-discordant treatment during a year long, before-and-after study. The dashed red lines indicate the beginning and end of the intervention period. The rate of goal-discordant treatment drops during the intervention, and then rebounds slightly after month 9. The number of preference-sensitive interventions performed during the intervention also decreased which resulted in larger confidence intervals in the post-intervention period.



5. Cluster-randomized trial of a complex intervention

ICUs are randomized to control or intervention after a 3 month baseline period. The research team prospectively asks patients and proxies about goals and treatment limitations in both groups to track goal-concordance. Simply asking about goals and treatment limitations appears to have raised the incidence of goal-concordant treatment in the control ICUs (red), but the treatment ICUs (blue) show an even greater increase in the rate of goal-concordant treatment suggesting that the intervention had an independent effect.



a. Scheunemann LP, Arnold RM, White DB. The Facilitated Values History. Am J Respir Crit Care Med. 2012;186:480–6.

Table S2: Assessing goal-concordance for 5 hypothetical ICU patients

Patient and Treatment	Goal	Treatment Limitations	Goal potentially achievable at the time of the treatment?	Treatment helps achieve the goal and respects the patient's treatment limitations?	Goal-concordant care?
Patient 1: 47 y.o. male with hypertension and diabetes mellitus type II admitted with small bowel obstruction due to adhesions, status post small bowl resection. On post-operative day 2, he has septic shock and is oliguric. **Treatment:** Continuous Renal Replacement Therapy (CRRT)	"He wants to get back to work and to being a father." - patient's wife	None (Full code)	**Yes** (physician judgement)	**Yes** There's a good chance his kidney failure will resolve and CRRT provides time for him to recover.	**Yes**
Patient 2: 68 y.o. woman with multiple comorbidities who has severe necrotizing pneumonia and ICU-acquired muscle weakness with 14 days of mechanical ventilation. **Treatment:** Tracheostomy	"I want to be at my daughter's wedding in the spring." - patient	"Try to help me get better, but if my heart stops don't do CPR." (DNR)	**Yes** (physician judgement)	**Yes** Tracheostomy will allow continued mechanical ventilation which increases her chances of attending the wedding.	**Yes**
Patient 3: 37 y.o. male with leukemia status post 2 failed bone marrow transplants admitted with renal failure due to persistent diarrhea secondary to graft-versus-host-disease and severe pneumonia. **Treatment:** Re-intubation and peripherally inserted central catheter (PICC)	"I want to be comfortable and in my own home." - patient	"Don't intubate me again. If I'm dying let me go." (DNR/DNI)	**Yes** (physician judgement)	**No** Re-intubation violates his treatment limitation and a PICC will not help achieve the patient's goal. All appropriate medications can be given via a non-IV route.	**No**
Patient 4: 71 y.o. male with end-stage interstitial lung disease and progressive hypoxia despite 14 days of ventilator support. He is not a transplant candidate. **Treatment:** Tracheostomy	"Beat my ILD and hike in the mountains next summer." - patient	None (Full code)	**No** (physician judgement)	**No** A tracheostomy will not improve this patient's chances of achieving his stated goal.	**No**
Patient 5: 87 y.o. female with advanced dementia admitted 1 week ago with ARDS secondary to influenza and MRSA pneumonia (ventilator settings: AC/400/25/30%/5). She has developed renal failure and is receiving intermittent hemodialysis. **Treatment:** Long term dialysis catheter	"She'd definitely want to be alive. She wouldn't mind living in a nursing facility." - patient's son	None (Full code)	**Yes** (physician judgement)	**Yes** A long-term dialysis catheter could allow this patient to be discharged to a long-term care facility.	**Yes**