Implementation of Best Practices - Protocols, Guidelines, Education, and Metrics

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Objectives

- Apply key pharmacotherapy concepts to overcome barriers to optimizing pain, sedation, and delirium therapy in mechanically ventilated ICU patients
- Apply key concepts in the selection of sedatives, analgesics, and antipsychotic agents in critically ill patients

Disclosures

- The authors of this presentation have no disclosures concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation

Strategies to Provide Optimal Pain and Sedation Therapy in the ICU

- Use of guideline or protocol that incorporates goal oriented administration of sedatives, analgesics, and antipsychotics
  - Sedation and Pain scale with frequent assessment
  - Routine assessment of ICU delirium
- Development of a pharmacotherapy plan based upon patient specific PK and PD characteristics
  - Avoidance of long acting continuous infusion sedative agents
  - Dose minimization strategies
- Daily interruption of sedatives and analgesics with spontaneous breathing trial
  - "Wake up and breath"
  - Early physical therapy and occupational therapy during interruption

Sessler CN, *Chest*. 2008 Feb;133(2):552-65.
Schweickert WD, Kress JP. *Crit Care*. 2008;12 Suppl 3:S6.

Poll the Audience

- Which component of a pain/sedation/delirium guideline or protocol do you think is the most important?

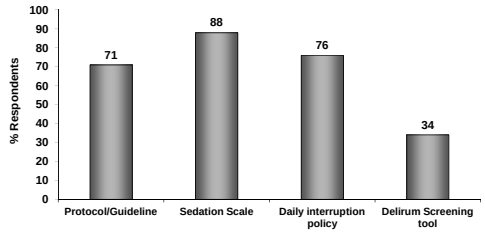
a) Assessment tools
b) Drug selection for specific patient populations
c) Dose limitation strategies
d) Daily Sedation Interruption (DSI)
e) Physical therapy

SCCM/ACCM Pain and Sedation Guidelines in Adults 2002

Timeless Recommendations	***Recommendations Likely to Change***
Use of sedation guidelines, algorithms, or protocols is recommended	Lorazepam is first line for most patients via intermittent i.v. or continuous infusion
Routine use of validated sedation, pain, and delirium assessment tools scales	Midazolam for short-term use only
Therapeutic plan development with use of sedation/analgesia goals	Haloperidol is the preferred agent for the treatment of delirium in critically ill patients
Analgesia before sedation	
Daily interruption strategies	
Fentanyl or hydromorphone preferred for hemodynamic instability or renal insufficiency	
Propofol is the preferred sedative when rapid awakening is important	

Jacobi J, et al. *Crit Care Med*. 2002 Jan;30(1):119-41

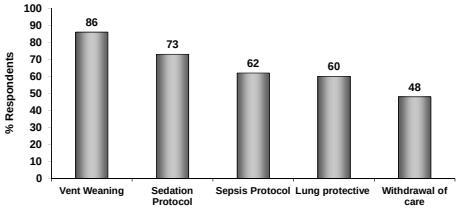
Delirium and Sedation in the ICU: Multinational Survey



Survey of 1,384 ICU practitioners between October 2006 and May 2007, distributed to ICU practitioners in 41 North American hospitals, seven international critical care meetings and courses, and the ***American Thoracic Society*** e-mail database

Patel RP, et al. *Crit Care Med*. 2009;37(3):825–32.

Availability of ICU protocols in US teaching hospitals



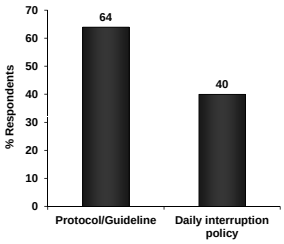
Survey of 90 directors of adult medical ICUs in US teaching hospitals in 2008 with a accredited US pulmonary and critical care fellowship programs

Prasad M, et al. *J Crit Care*. 2010 Dec;25(4):610-9.

Poll the Audience

- Which of the following do you find the largest barrier to the use of guideline or protocols for sedation, analgesia, and delirium in the ICU setting?
  a) Sedation protocols are not applicable to all subgroups of ICU patients
  b) Compliance of bedside practitioners
  c) Lack of evidence suggesting benefit
  d) Lack of ICU resources

Perceived barriers to the use of sedation protocols and daily sedation interruption

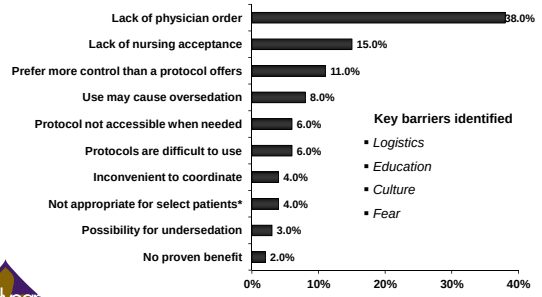


Site Variable	Respondents %	P value
Protocol Availability		
University	64%	
NON University	64%	
Community	65%	
VA	37%	
≥ 20 beds	72%	0.03
≤ 5 beds	43%	

Multidisciplinary, web-based survey to determine current use of sedation protocols and DSI and the perceived barriers to each, and administered it to members of the Society of Critical Care Medicine. Of the 12,994 ***SCCM*** members surveyed, 916 (7.1%) responded.

Tanios MA, et al. *J Crit Care*. 2009 Mar;24(1):66-73.

Perceived barriers to the use of sedation protocols and daily sedation interruption



* Responders cited examples such as neurosurgical, head trauma, and pediatric patients

Tanios MA, et al. *J Crit Care*. 2009 Mar;24(1):66-73.

Stepwise Approach to Developing and Implementing ICU Sedation Protocols and Guidelines

Phase I: Development

1. Creation of the "physical champion(s)"
2. Multidisciplinary Committee
3. Data synthesis
4. Protocol drafting

Phase II: Implementation

1. Pilot Analysis
   - Efficacy, Safety, Adherence
2. Endorsement of protocol from institutional credible bodies
3. Education to all ICU clinicians
4. Integration with electronic documentation and clinical monitoring systems

Phase III: Continuous Quality Improvement (CQI)

1. Periodic Metric Assessment
2. Guideline update with current literature
3. Publication of efficacy, safety, and compliance data
   - Benchmarking against other institutions
   - Assistance in guideline development

Should we implement a Protocol or Guideline?

- Protocol
  - "A detailed plan of a scientific or medical experiment, treatment, or procedure"

Policy implementation for compliance metrics
1. Assessment tools
2. Daily Interruption

- Guideline
  - "A standard or principle by which to make a judgment or determine a policy or course of action"

Fusion of both strategies

Flexibility to fit clinical assessment
1. Agent selection
2. Dosing strategies
3. Monitoring (labs, EKG)

What information goes into a Guideline or Protocol?

- Policy on Pain, Sedation, and Delirium assessment tools/technology
  - Goal Orientated administration of pharmacotherapy
- Pharmacotherapy selection based upon patient specific parameters
- Dose Limitation Strategies
  - Avoidance of continuous infusion therapy
  - Recommendations for bolus therapy
  - Daily Sedation Interruption policy: Clear inclusion/exclusion criteria
- Monitoring and Safety considerations
- Special Patient Populations
  - Neuromuscular Blockade
  - Frequent Neurocognitive Assessment
  - Elevated intracranial pressure
  - Therapeutic Hypothermia
  - Palliative Care
  - Fast track surgical

Poll the Audience

- What aspects of a sedation protocol do you think provide the greatest degree of improvement in patient outcomes?
  a) Reduced use of continuous infusions
  b) Daily interruption strategies
  c) Systematic titration to goal sedation
  d) Benzodiazepine and opioid dose reductions

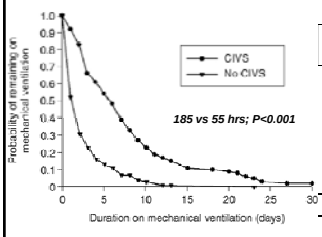
Question

- What outcomes have improved as a result of implementation of sedation protocol or guideline?
  a) Reduced ICU LOS
  b) Reduced hospital LOS
  c) Reduced duration of mechanical ventilation
  d) Reduced the incidence of nosocomial infection
  e) All of the above

Question

- Which critically ill populations are most likely to benefit from implementation of best practices for pain, sedation, and delirium via guideline or protocol?
  a) Fast track cardiac surgery
  b) Trauma patients
  c) Medical patients
  d) Surgical (non cardiac)
  e) Neuroscience

Retrospective Evaluation of Continuous vs Intermittent Sedation Therapy in MICU



Significant patient characteristics/metrics/outcomes

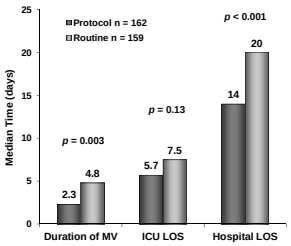
	CIVS	NO CIVS	P value
Age*	49	61	<0.001
PaO2/FiO2*	175	232	0.005
NMB†	12 (13)	0	<0.001
Reintubation†	14(15)	7 (5)	0.005
ICU LOS*	13.5	4.8	<0.001
Hospital LOS*	21	12.8	<0.001
Bolus therapy†	66 (71)	64 (43)	<0.001

*Data presented in mean
†Data presented as n (%)

Single center, **retrospective** evaluation of 240 mechanically ventilated MICU patients stratified by continuous intravenous sedation (n = 93) or interrupted/no continuous IV sedation n = 149) at Barnes Jewish Hospital from August to December 1997.

Kollef MH, et al. *Chest.* 1998;114:541-548.

Nursing-Implemented Sedation Protocol: Barnes Jewish Pilot United States



Significant patient characteristics/metrics/outcomes

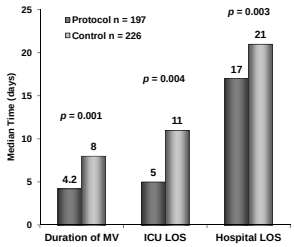
	Protocol	Routine	P value
CIVS†	66 (40)	66 (42)	0.9
Duration CIVS, hrs*	3.5 ± 4	5.6 ± 6.4	0.003
Bolus†	118 (72)	127 (80)	0.14
Reintubated†	14 (8.6)	21 (13)	0.2
Trached†	10 (6.2)	21 (13.2)	0.04

*Data presented in median †Data presented as n (%)
CIVS; Continuous intravenous infusion sedation

Single center, prospective, trial of 332 consecutive ICU patients requiring mechanical ventilation randomized to protocolized sedation (n = 162) or routine care (n = 159) at Barnes Jewish Hospital from 8/97 to 7/98. Protocol used goal orientated sedation to target Ramsey with bolus requirements before initiation of continuous infusion and up titration of opioids and benzodiazepines.

Brook AD, et al. *Crit Care Med*. 1999;27(12): 2609–15.

Nursing-Implemented Sedation Protocol: Bocage University Hospital France



Significant patient characteristics/metrics/outcomes

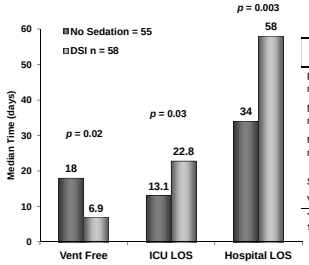
	Protocol	Control	P value
Daily midazolam, mg*	44 ± 31	92 ± 59	0.001
Duration midazoam, hrs**	3	5	0.18
Reintubated†	11 (6)	29 (13)	0.01
VAP diagnosis†	12 (6)	34 (15)	0.005

*Data presented in mean ** Data presented in median
†Data presented as n (%)

Single center, prospective, before-after trial of 423 ICU patients requiring mechanical ventilation for > 48 hours before (n=226) and after (n=197) implementation of sedation protocol at Bocage University Hospital from 5/99 to 12/03. Protocol used goal orientated sedation to target Q3hr Cambridge scale with bolus requirements before initiation of continuous infusion and up titration of midazolam

Quenot JP, et al. *Crit Care Med*. 2007 Sep;35(9):2031-6.

No Sedation vs. Propofol/Midazolam Infusion with Daily Sedation Interruption



Significant patient characteristics/metrics/outcomes

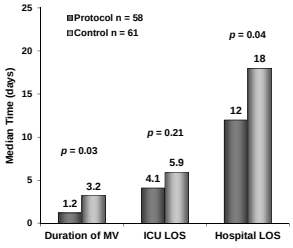
	No Sedation	Sedation + DSI	*P* value
Propofol/hr, mg/kg*	0 (0–0.5)	0.77 (0.1–1.6)	<0.001
Midaz/hr, mg/kg*	0 (0–0)	0.003 (0–0.02)	<0.001
MSO4/hr, mg/kg*	0.005 (0.001–0.01)	0.0045 (0.002–0.006)	0.39
Sitter use†	11 (20)	3 (5)	0.02
VAP†	6 (11)	7 (12)	0.85

*Data presented in median (IQR)
†Data presented as n (%)

Single center, prospective, open label trial of 140 ICU patients requiring mechanical ventilation randomized to a protocol of the institutions standard of "no sedation" (n = 70) or propofol/midazolam infusion with daily sedation interruption (n = 70) at Odense University Hospital, Denmark. 27 patients were excluded from the statistical analysis because mechanical ventilation was stopped within 48 hrs.

Strøm T, et al. *Lancet*. 2010 Feb 6;375(9713):475-80.

Pain-Sedation-Delirium Protocol in Trauma Patients: University Cincinnati



Significant patient characteristics/metrics/outcomes

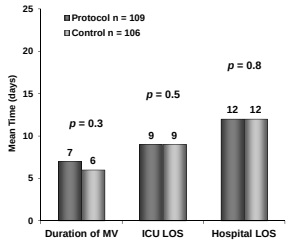
	Protocol	Control	P value
Propofol infusions†	52 (90)	49 (81)	0.25
Propofol,mcg*	10,057 ± 14,616	19,232± 22,477	0.01
MSO4,mcg*	1,641± 1,250	2,465±1,2 42	<0.001
Lorazepam infusions†	8 (16)	24 (39)	0.003

*Data presented in mean ** Data presented in median
†Data presented as n (%)
CIVS; Continuous intravenous infusion sedation

Single center, retrospective, before-after trial of 143 Trauma ICU patients requiring mechanical ventilation before (n=75) and after (n=68) implementation of sedation protocol at the University Hospital in Cincinnati between during 6-11/04 and 6-1/06. Protocol focused on light goal oriented sedation, limit the use and duration of continuous infusion sedation, increase awareness of delirium. No DSI required.

Robinson BR, et al. *J Trauma*. 2008 Sep;65(3):517-26.

Analago-Sedation Protocol in Neuroscience ICU: Copenhagen Denmark



Significant patient characteristics/metrics/outcomes

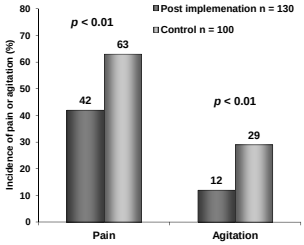
	Protocol	Control	P value
Ramsay Score*	4.38 ± 1.21	4.41 ±1.25	0.65
Pain Intensity score*	1.24 ± 0.61	1.54 ±0.73	<0.001
DSI†	22 (20%)	47 (44%)	0.001
Fentanyl mcg/day*	4,919 ± 3,588	2,303 ± 1,606	<0.01
Propofol, mg/day*	2,074 ± 1,308	2,592 ± 1,623	<0.01
Midazolam mg/day	157 ± 122	238 ± 152	0.001

*Data presented in mean ** Data presented in median
†Data presented as n (%)
CIVS; Continuous intravenous infusion sedation

Single center, retrospective, before-after trial of 215 Neuroscience ICU patients requiring mechanical ventilation before (n=106) and after (n=109) implementation of sedation protocol at Copenhagen University Hospital in Denmark between during 2007 -2008. Protocol focused on light goal oriented analgo-sedation, limit the use and duration of continuous infusion sedation, provisions for elevated ICP, DSI addressed but not required.

Egerod I, et al. *Crit Care*. 2010;14(2):R71.

Systematic Implementation of Pain and Sedation tools: Montpellier France



Significant patient characteristics/metrics/outcomes

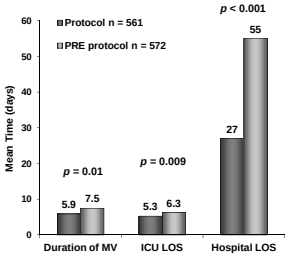
	Pre	Post	P value
Mechanical Ventilation, hrs*	120	65	0.01
Duration CIVS, hrs*	84	48	0.03
Duration CIVI Opioid, hrs*	96	60	0.02
Nosocomial infection†	17 (17)	11 (8)	<0.05

*Data presented in median hrs; †Data presented as n (%)
CIVS; Continuous intravenous infusion sedation

Single center, prospective, Two-phase, controlled study of 230 ICU patients requiring > 24hr stay before (n = 100) and after (n = 130) implementation of a pain and sedation Montpellier University hospital in France. Education and encouragement of use of pain scale and sedation assessment tools.

Chanques G, et al. *Crit Care Med*. 2006;34(6):1691–9.

Impact of Pain-Sedation-Delirium Protocol on Subsyndromal Delirium



Significant patient characteristics/metrics/outcomes

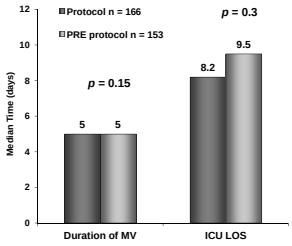
	Protocol	PRE	P value
Delirium†	(34.2)	(34.7)	0.9
Subsyndromal Delirium†	(24.6)	(33)	0.009
Lorazepam equivalents, mg*	2.75 ± 7.94	5.79 ± 31.78	0.02
MSO4 equivalents, mg*	22.3 ± 40.1	103.5 ± 239.2	<0.001

*Data presented in mean †Data presented as n (%)
Subsyndromal delirium; max ICDSC 1-2 in ICU

Single center, observational trial of 1,133 adult ICU patients requiring > 24hrs of ICU care before (PRE) (n = 572) and after (n = 561) implementation of a protocol for pain, sedation, and delirium management at Hospital Maisonneuve-Rosemont from 8/03 to 11/05. Protocol used goal orientated sedation to target RASS and NRS.

Skrobik Y, et al. *Anesth Analg*. 2010 Aug;111(2):451-63.

Implementation of pediatric sedation protocol: Seattle Children's



Significant patient characteristics/metrics/outcomes

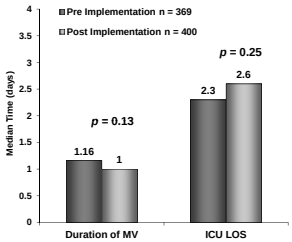
	Protocol	PRE	P value
Morphine infusion, days*	5	6	0.015
Lorazepam infusion, days*	0	2	<0.001
Total sedation, days*	5	7	0.03
Dexmedetomidine use†	40 (25)	74 (48)	-

*Data presented in median †Data presented as n (%)

Single center, observational trial of 319 pediatric ICU patients requiring mechanical ventilation before (PRE) (n = 153) and after (n = 166) implementation of a protocol for pain and sedation management at Seatle Childrens Hospital. Protocol used goal orientated sedation to target local PICU sedation score. DSI not required.

Deeter KH, et al. *Crit Care Med*. 2011 Apr;39(4):683-8.

Nursing-Implemented Sedation Protocol: Royal Perth Hospital Australia



Significant patient characteristics/metrics/outcomes

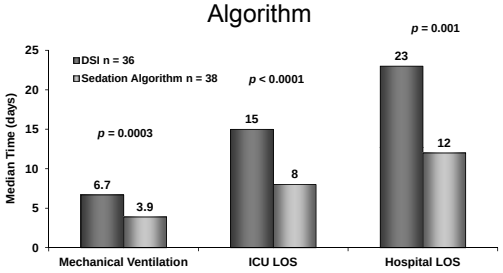
	Pre	Post	P value
Sepsis Pneumonia†	40 (10.8)	26 (6.5)	-
Trauma†	59 (15.4)	80 (19.8)	-
Cardiac Surgery†	84 (22.8)	110 (27.5)	-

*Data presented in median
†Data presented as n (%)
Incomplete data set for appropriate metric assessment

Single center, before after analysis of 769 Mixed ICU patients requiring > 6 hrs of mechanical ventilation before (n=369) and after (n=400) implementation of Q6hr Richmond Agitation-Sedation Scale (RASS) and the Behavioral Pain Scale (BPS) assessments at Royal Perth Hospital.

Williams TA, et al. *Am J Crit Care*. 2008 Jul;17(4):349-56.

The Dangers of New Interventions and Culture: DSI vs Nursing-Implemented Sedation Algorithm



Single center trial of 74 adult MICU patients on mechanical ventilation randomized to sedation therapy guided by new sedation algorithm or daily interruption of sedation with no algorithm.

de Wit M, et al. *Crit Care*. 2008;12(3):R70.

Teasing out the positive outcomes in ICU sedation protocols and guidelines

Practice change/metric	Outcome	Citation
Reduction of CIVI benzo's and opioids	↓ Duration of MV and LOS ↓ Nosocomial Infection	Brook AD, et al. *Crit Care Med*. 1999;27(12): 2609–15. Chanques G, et al. *Crit Care Med*. 2006;34(6):1691–9.
Reduction in opioid and/or benzo consumption	↓ Duration of MV and LOS ↓ Nosocomial Infection ↓ Subsyndromal delirium	Quenot JP, et al. *Crit Care Med*. 2007 Sep;35(9):2031-6 Marshall J, et al. *Crit Care Med*. 2008 Feb;36(2):427-33 Robinson BR, et al. *J Trauma*. 2008 Sep;65(3): 517-26
Daily sedation interruption	↓ Duration of MV and LOS	Kress JP, et al. *N Engl J Med*. 2000 May;18;342(20):1471-7
Shift in prescribing patterns of sedatives and analgesics	↓ Duration of MV and LOS	Carson SS, et al. *Crit Care Med*. 2006 May;34(5):1326-32.
Analgo-sedation	↓ Duration of MV and LOS	Strøm T, et al. *Lancet*. 2010 Feb 6;375(9713):475-80.

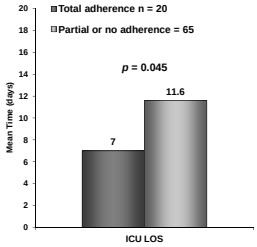
LOS: length of stay; MV: mechanical ventilation

Multimodal interventions are required to improve outcomes related to therapy for pain, sedation, and delirium

Poll the Audience

- How many clinicians in the audience routinely assess adherence with their ICU sedation protocols or guideline components?

Adherence to an guideline for pain, sedation, and neuromuscular blockade



Significant patient characteristics/metrics/outcomes

	Total Adherence	Partial or non adherence	P value
Restraints†	15 (19.2)	54 (83)	0.03
Nosocomial infection †	5 (25)	27 (42)	0.182

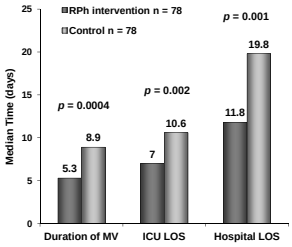
*Data presented in mean †Data presented as n (%)

- Physicians and nurses had partial or total adherence to the guidelines in only 58% of patients

Single center trial of 90 consecutive adult MICU patients requiring mechanical ventilation and prescribed sedatives or opioids after implementation guideline for pain, sedation, and neuromuscular blockade.

Bair N, et al.*Crit Care Med*. 2000 Mar;28(3):707-13.

Pharmacist Enforced Adherence to an ICU Sedation Guideline: Boston Medical Center MICU



Significant patient characteristics/metrics/outcomes

	RPh	Control	P value
Alcohol/drug overdose†	15 (19.2)	6 (7.7)	0.03
Lorazepam equivalents/vent day,mg*	65.2 ± 114.1	74.8 ± 76.1	0.54
Fentanyl equivalents/vent day,mcg*	102.5 ± 328	400 ± 1026	0.02

*Data presented in mean †Data presented as n (%)

Single center trial of 156 adult MICU patients requiring mechanical ventilation before (n = 78) and after (n = 78) implementation of RPh enforced guideline sedation management at Boston Medical Center. Guideline addressed use of agent selection, goal oriented therapy, and dose limitation strategies.

Marshall J, et al. *Crit Care Med*. 2008 Feb;36(2):427-33

Impact of a tele-ICU pharmacist on the adherence to an ICU sedation guideline: UMASS

Impact of Tele-ICU pharmacist on Adherence measures

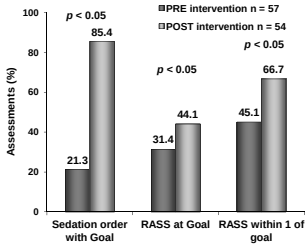
	Pre n = 1079	Post n = 1073	P value
Patients with documentation of indication or contraindication to DSI†	748 (43)	823 (49)	<0.0001
Documentation of DSI performed†	338 (45)	444 (54)	<0.0001
Total RPh interventions	1359	1874	<0.0001
Sedation related RPh therapeutic interventions	35	166	<0.0001

*Data presented in median hrs; †Data presented as n (%)
DSI: daily sedation interruption

Single center analysis of adult ICU patients with a daytime RPh Pre group (n = 1079) and daytime RPh + nighttime tele-RPh Post group (n = 1073) on the adherence of an ICU sedation guideline at UMASS Medical Center. Guideline addressed use of agent selection, goal oriented therapy, and daily interruption strategies.

Forni A, et al. *Ann Pharmacother*. 2010 Mar;44(3):432-8.

BWH MICU Sedation Guideline Quality Improvement Initiative



Significant patient characteristics/metrics/outcomes

	PRE	POST	P value
Organ dysfunctions/ patient*	1.8 ± 0.9	2.2 ± 1.1	0.03
Duration of MV, hrs*	120 ± 118	166 ± 170	0.10
ICU LOS, days*	9.3 ± 9.1	10.6 ± 9.8	0.48
Midazolam vent day,mg*	25 ± 32	22 ± 24	0.56
Fentanyl vent day,mcg*	648 ± 765	784 ± 911	0.4

*Data presented in mean †Data presented as n (%)
Drug dosing in midazolam and fentanyl equivalents

Single center trial of 111 adult MICU patients requiring mechanical ventilation for ≥ 12 hours before (n = 57) and after (n = 54) systematic implementation of a guideline for pain, sedation, and delirium management at Brigham and Women's Hospital. Guideline addressed agent selection, use of goal oriented therapy, and dose limitation strategies.

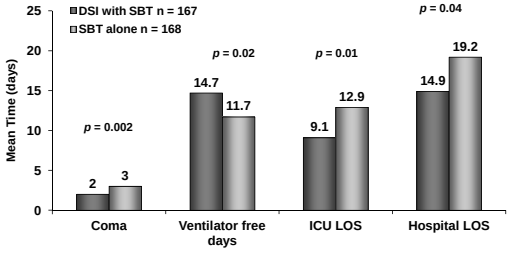
DeGrado, J, et al. *J Pain Res*. 2011;4:127-34.

Poll the Audience

- For audience members who have a protocol or guideline in place, when was the last time it was updated?

a) < 1 year
b) 1-3 years
c) 3- 5 years
d) > 5 years

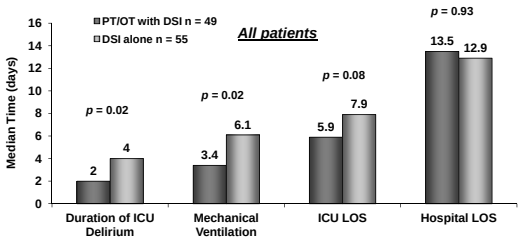
Paired Sedation and Ventilator Weaning Protocol: *ABC Trial*



Four center trial of 336 mechanically ventilated patients randomized to management with a DSI followed by an SBT or with sedation per usual care plus a daily SBT.

Girard TD,et al. *Lancet*. 2008 Jan 12;371(9607):126-34.

Early PT and OT in Mechanically Ventilated ICU Patients



Two center trial of 104 adult patients on mechanical ventilation for less than 72 hrs, randomized to early exercise and mobilization (PT and OT) during periods of daily interruption of sedation or to daily interruption of sedation with therapy as ordered by the primary care team.

Schweickert WD, et al. *Lancet*. 2009 May 30;373(9678):1874-82.

Who needs to be involved in the development, implementation, and assessment process?

- Physicians
- Pharmacists
- Nurses
- Information systems personnel
- Respiratory Therapists
- Physical Therapists
- Occupational Therapists

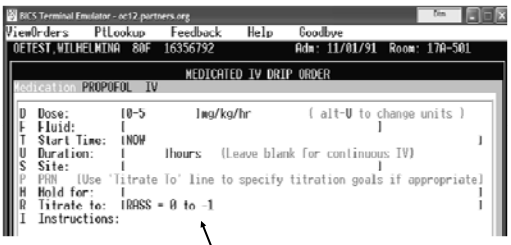
Question

- Which of the following will help with implementation and adherence to best practice surrounding pain, sedation, and delirium therapy?
  a) Education
  b) Information Systems integration
  c) ICU checklists
  d) Continuous quality assessment/reporting
  e) All of the above

Multidisciplinary Education

- Educate all players involved
  - Nurses: Assessment and delivery
  - Physicians
  - Pharmacists
  - Respiratory Therapists
  - Physical Therapists
- Scheduled educational sessions
- Address the barriers

Integration of Guidelines into Clinical Information Systems



Default sedation goal documented in medication order

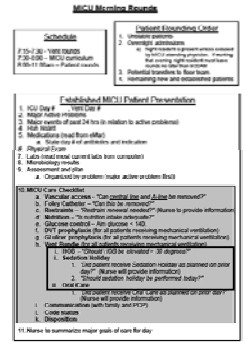
Integration of Guidelines into Clinical Information Systems

Change of default sedation goal requires documentation of reason

Integration of Documentation

- Documentation in to Systems
  - Paper based
  - IS based
- Bells and whistles
  - Reminders for Glucose checks vs RASS checks?
  - Clinical Monitoring Systems

ICU Checklists



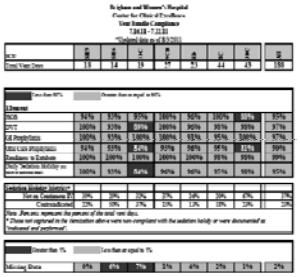
- Mandatory verbal review of the checklist on daily work rounds
  - Physician
  - Nurse
- Simple
- Cheap
- Improve both consideration and implementation of intensive care unit best practices

Vincent JL.*Crit Care Med*. 2005 Jun;33(6):1225-9.
Byrnes MC, et al. *Crit Care Med*. 2009 Oct;37(10):2775-81.

Continuous Quality Improvement: Metrics of Sedation-Analgesia-Delirium

Metric Variable	Assessment	Metric Target
Sedation Assessment	Q3hr or more frequent	100%
Pain Assessment	Q3hr or more frequent	100%
Delirium Assessment	Q12-Q24hr	100%
Daily Interruption	Daily after 48 hours	100%
Time in target goal	% of assessments	≥ 70%??
Time in target +/- 1 of RASS goal		≥ 80%??
Assessment "comatose"	'never event'??	?
Incidence of delirium	Patient population dependant	0%
Days in delirium		?

Continuous Quality Assessment



- Cycled reports
  - Weekly or monthly
- Established metric goals
- Outliers flagged for follow up by educators and administrators
- Results available to:
  - Bedside clinicians
  - Administration

Summary

- Implementation of best practices for pain, sedation, and delirium management by means of protocols and guidelines is associated with improvement in patient outcomes
- Continuous quality assessment and improvement initiatives can provide clinicians with valuable information needed to address barriers and improve outcomes

Questions and Audience Feedback

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