

Sedation: Training and Credentialing Hospitalists for Safe and Effective Sedation Delivery

Douglas Carlson, M.D.
Chief, Pediatric Hospital Medicine
Chair Credentials Committee
St. Louis Children's Hospital
Associate Professor of Pediatrics
Washington University

Characteristics of Pediatric Hospitalists Providing Moderate to Deep Sedation: A Study from the Pediatric Research in Inpatient Settings (PRIS) Network

David Marseille MD, Jennifer Maniscalco MD MPH, Michael Turmelle MD, Mary Ottolini MD MPH, Douglas Carlson MD

Children's National Medical Center Washington, DC

St. Louis Children's Hospital Saint Louis, MO

Background and Objective

There is a large variation in the environment, clinical role and practice of Pediatric Hospitalists (PHs) who administer moderate or deep sedation (MDS) to patients for procedures. This study was performed in order to better define the current epidemiology, training, and practices of Pediatric Hospitalists providing moderate or deep sedation (PH-MDS).

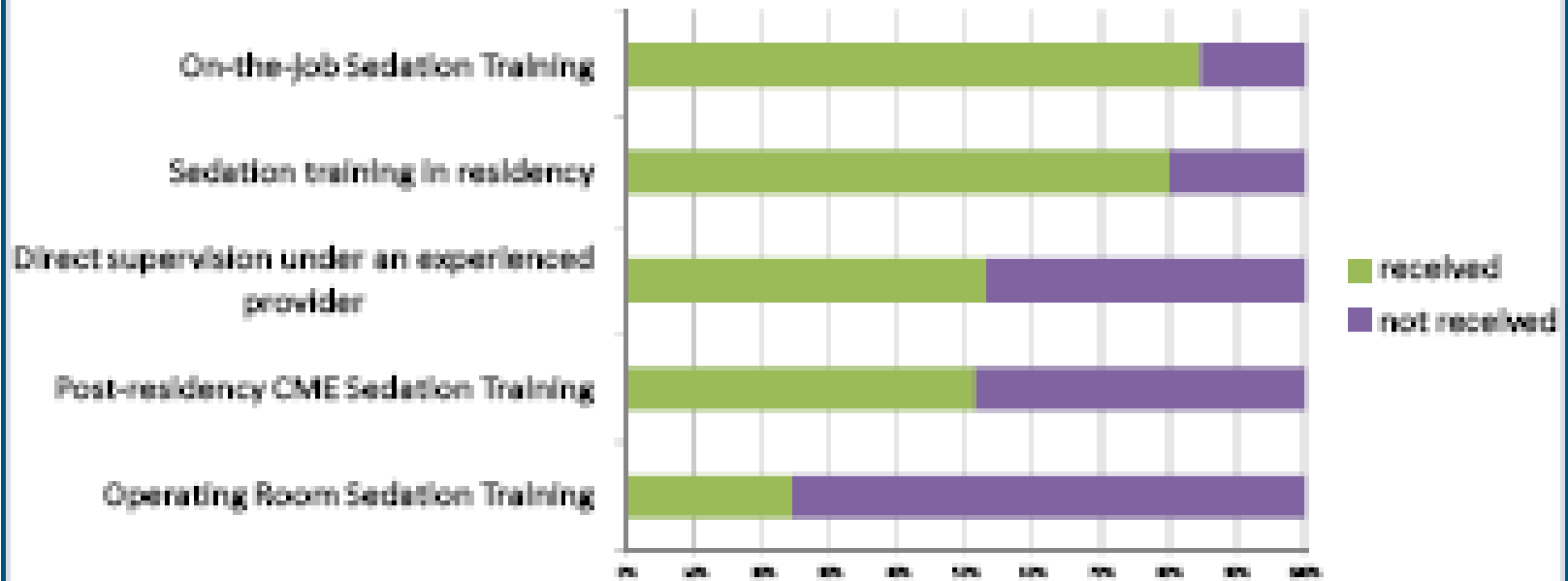
Results

- 265 evaluated surveys
- 54% of pediatric hospitalists say that they provide moderate or deep sedation
- No difference in gender, geographic location, residency training, residency size or involvement in teaching
- Sedation providers more likely to work in community hospital, to work in non-academic environment, to have 10+ years experience as a hospitalist, to do some work in a PICU, spend greater than $\frac{3}{4}$ time as a hospitalist, and not participate in research

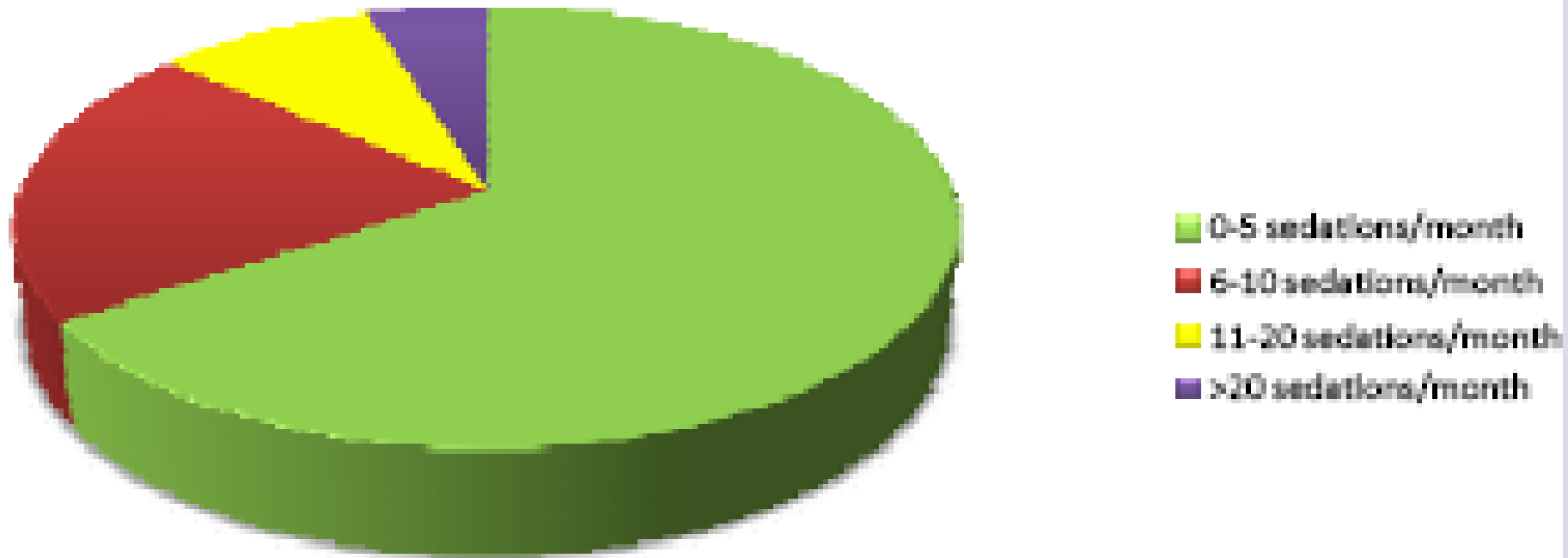
Significant and Nearly Significant Odds Ratios for Characteristics of PH-MDS

Characteristic	OR	95% CI
Practice in an academic environment*	0.46	0.24-0.88
Work in a Community Hospital with Pediatric Services	3.71	1.92-7.15
Perform some type of research***	0.51	0.30-0.86
Spend > 75% professional time as a PH	1.73	1.01-2.95
Completion of residency before 1997	1.97	1.15-3.37
Physician of record for PICU	5.53	1.57-19.50
Physician of record for ED	2.09	0.98-4.46
Physician of record for Step-Down Unit	1.60	0.88-2.91

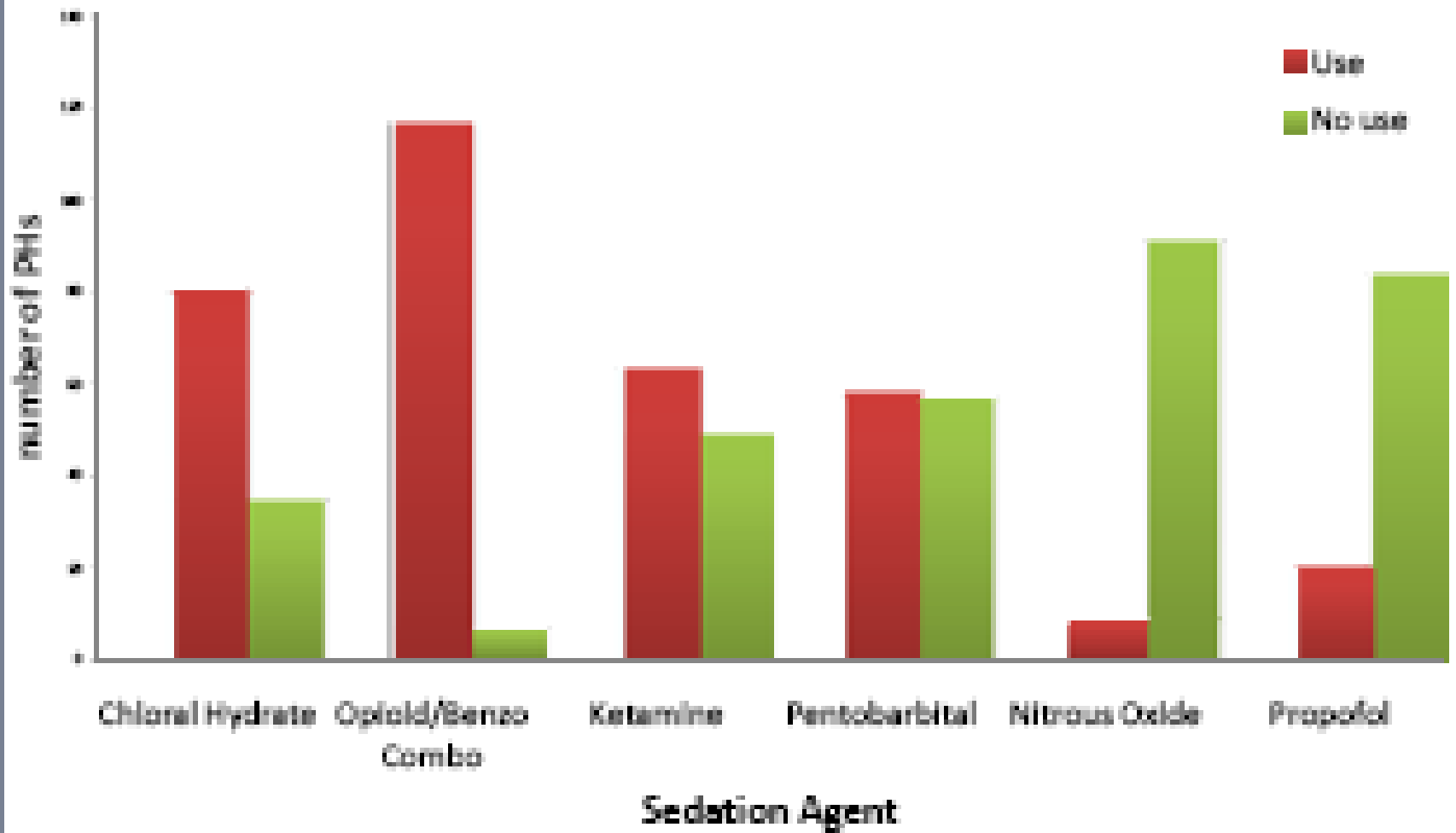
PH-MDS Sedation Training



Average Monthly Frequency of PH MDSs



Medication use of PH-MDS



SLCH Sedation Program Reasons for Development

- **Patient Safety**
- **Improved efficiency**
- **New medications**
- **External regulatory guidelines**
- **Internal guidelines and credentialing**

Should we provide this service?

- 1) Is there a clinical need? How well is that need defined?**
- 2) Are we the best group to provide this coverage?**
- 3) Will providing this clinical service add to the overall career satisfaction and development of the hospital medicine group?**
- 4) Does it make sense financially**

Why the general pediatric/Hospitalist group?

- **Group of 36 general pediatricians already providing service at St. Louis Children's Hospital and an affiliated community hospital**
- **Experienced in mild and moderate sedation**
- **Also providing service in EU, Transport and PICU**

Expected Outcomes

- **Decreased complications**
- **More day to day physician input**
- **Increased numbers of MRI and other radiology sedations**
- **Improved patient satisfaction**
- **Improved referring and staff physician satisfaction**

SLCH Sedation Program

Goal: To provide coverage of all moderate and deep sedations occurring outside of the OR, PICU, NICU and EU that are not otherwise covered by a sedation trained provider

- 1) Ambulatory Procedure Center**
- 2) Pediatric Acute Wound Service (PAWS)**
- 3) Overnight, on-call, coverage (starting 9/05)**

Selection of Physicians

- **At least one year of experience in our hospitalist program**
- **Track record of strong clinical and interpersonal skills**
- **Commitment of a minimum of 2 years of clinical service after training**

Ambulatory Procedure Center (APC)

- **Sedation for MRI, CT, Bone Scan**
- **Also EMG, ABR, PET**
- **Primarily Deep sedation**
- **Pentobarbital, chloral hydrate and propofol**

Training for deep sedation in the Ambulatory Procedure Center

- **6 physicians initially selected**
- **Current “basic” sedation privileges**
- **Didactic course and simulation lab time**
- **10 OR training days with a minimum of, 25 intubations, 15 LMA placements and 15 BVM cases**
- **25 directly supervised Propofol sedations**

PAWS

- **2 procedure rooms**
- **Burns, abscesses, surgical infections, any tissue injury**
- **Volume 6-25 patients per day, majority outpatient**
- **Ketamine, nitrous oxide + oral oxycodone, oral oxycodone + midazolam**

Training for moderate and deep sedation in the Pediatric Acute Wound Clinic

- **8 Physicians selected**
- **All with program at least one year**
- **All with basic sedation privileges**
- **5 OR days**
- **Minimum 10 supervised nitrous sedations and 10 supervised ketamine sedations**

24 hour coverage

- **On-call, not in hospital**
- **Must be present for all moderate and deep sedation**
- **Co-ordination with existing services, APC and PAWS**
- **Overall need, number of patients, hard to predict**

Coding

- **Anesthesia codes when providing deep sedation**
- **Bill moderate sedation codes for moderate sedation**
- **Time based**
- **Code by procedure being done**
- **Example: MRI brain with contrast 32-75045; Debridement, skin partial thickness 32-11040**

E&M codes

- **When providing supervision, performing pre-sedation evaluation, but not directly providing sedation**
- **“Established Patient Visit” Level 3-low complexity**

Moderate Sedation Codes

- **New codes developed through AAP and others**
- **New CPT codes available Jan. 1, 2006**
- **RVU's currently not assigned**
- **Our experience is billing and collecting using these codes has been good**

New Codes

- **Pediatric specific**
- **Two physician/Two procedure model**
- **Each physician codes independently**

99148

Moderate sedation services provided by a physician other than the health care professional performing the diagnostic or therapeutic service that the sedation supports.

Under 5 years of age

Up to 30 minutes intraservice time

Code in additional 15 minute increments

Age 5 or older: code 99149

Other moderate sedation codes

- 99143 Same physician sedates and performs diagnostic or therapeutic procedure, requires presence of an independent trained observer to assist in monitoring; under age 5
- 99145 Same as above, age 5 and over
- +991450 Time modifier for codes 99148 and 99149
- +99145 Time modifier for codes 99143 and 99144

Charges

- <http://www.cms.hhs.gov/physicians/pfs/>
- Website of the Center for Medicare and Medicaid Services (CMS)

Financial Planning

- **Financial risk when starting program**
- **Revenue likely to meet expenses after time**
- **Likely to need salary support in beginning**
- **Service of benefit to hospital financially, increased radiology services**

Hospitalist Run Sedation Services

Conclusion

- **Good for patient care**
- **Good for job satisfaction**
- **Good for professional development**
- **Reimbursement for services is good (but this may be regionally variable, and may change in the future)**

How many drugs should you use?

- Safety based on level of sedation that may be unexpectedly achieved
- Need to define goals of sedation: pain control, motion, anxiolysis
- Best to minimize number of choices to meet demands
- Best to use fewest number of drugs per patient to meet goals

Ketamine

- Use for painful procedures and short motionless procedures.
- PICC, LP, Abscess drainage, complex laceration repair, EMG
- We now use it as primary drug for CT and have been very successful
- May need to consider other drugs when worried about increased intracranial pressure

Ketamine Dosing

- Initial dose of 1-2mg/kg. Usually enough for short painful procedures. Effects last 5-15 minutes.
- For longer procedures give doses of 0.5-1mg/kg as needed.
- ? Max dose. We use for procedures up to 30 minutes, but have used for sedations lasting up to an hour. If expected more than 30 minutes would go to OR

Dexmedetomidine

- Prolonged motionless sedation
- Is replacing pentobarbital in our institution
- Increasing evidence of safety. Large series from Boston Children's, Mason et al
- Give initial bolus of 1-2 mcg over 10 minutes.
- Slower onset than most other drugs we use.

Dex cont.

- We monitor as deep sedation
- Patients aroused easily, sometimes have movement during loud portions of MR.
- We augment sedation with Midazolam 0.1mg/kg IV as needed for motion. Use up to 2 doses.
- Boston study, augmented with pentobarbital 2mg/kg

Questions?