

# *Sleep and the Respiratory Therapist*

## *Opportunities*

Brian W. Carlin, MD  
Assistant Professor of Medicine  
Drexel University School of Medicine  
Sleep Medicine and Lung Health Consultants  
Pittsburgh, Pennsylvania

Kansas Society for Respiratory Care  
April 2014

## Brian W. Carlin, MD Disclosures

### Speakers' bureau / Clinical research

Glaxo Smith Kline  
Boehringer-Ingelheim  
Forest  
Breathe Technologies  
Smith's Medical  
PneumRx  
Philips Respironics

### Fiduciary Responsibilities

National Lung Health Education Program (NLHEP)  
National Board for Respiratory Care (NBRC)

## LEARNER OBJECTIVES

- List two opportunities available to a respiratory therapist in the field of sleep medicine.
- To list the types of certifications available for the respiratory therapist.

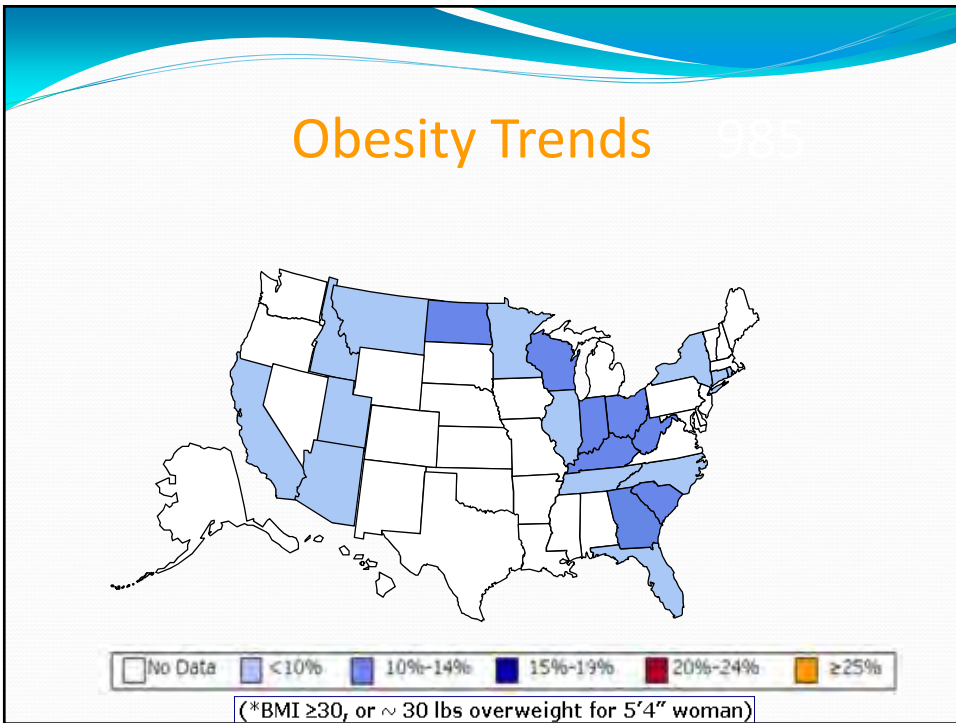
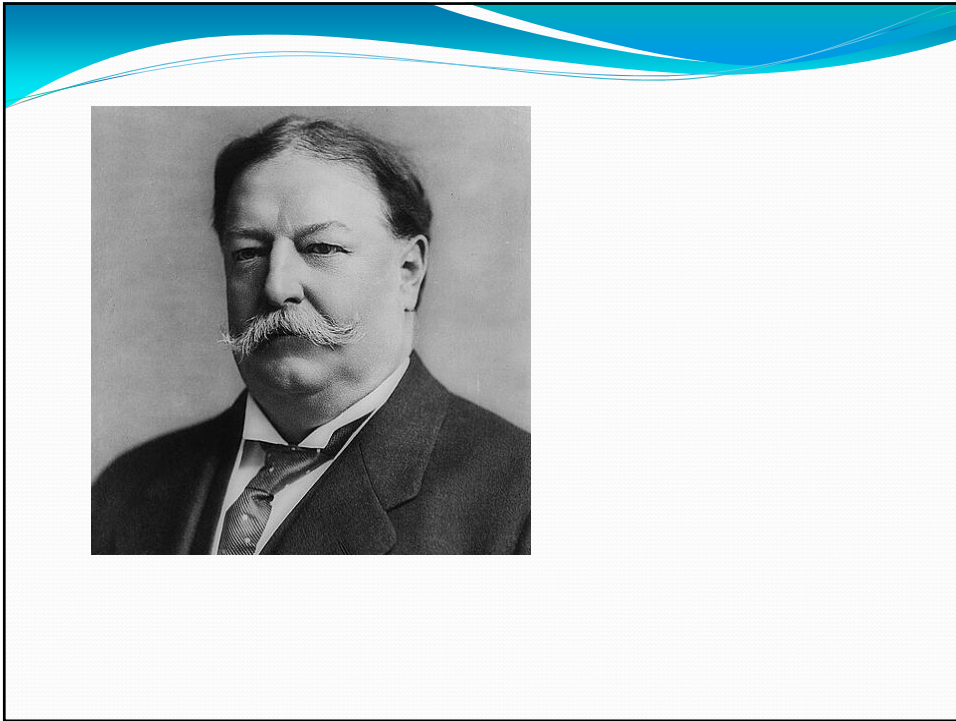
## What I Hear ?

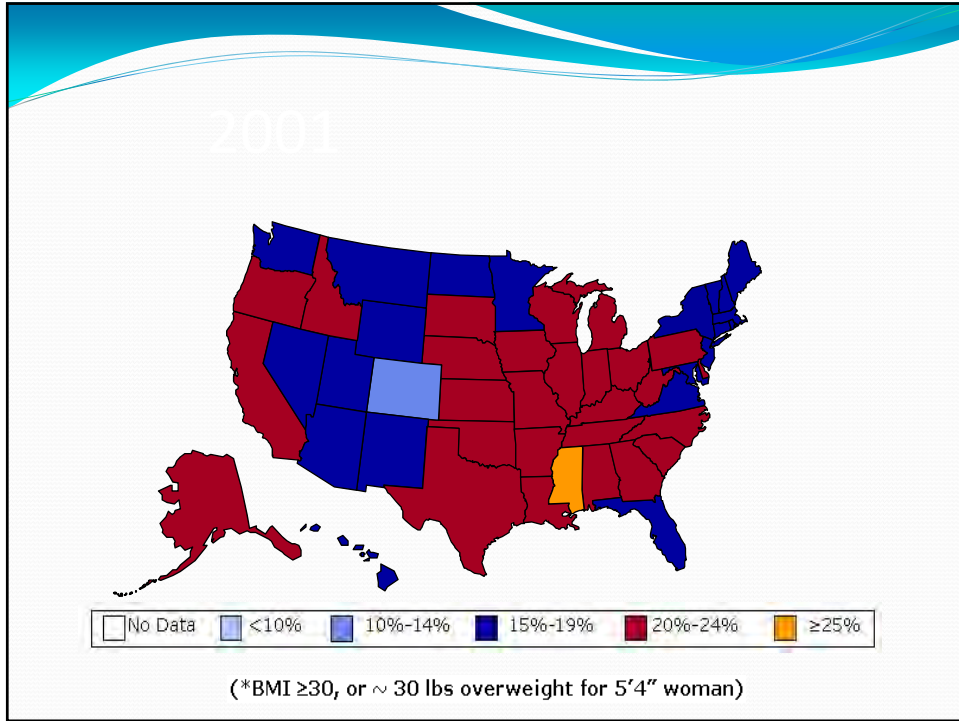
- No jobs available
- No pay available
- Same old, same old

Your Assignment:

Define the Opportunity







## Prevalence of Sleep Apnea (RDI > 5 and EDS)

Young NEJM, 1993  
 USA  
 N = 802      2% Women  
                   4% Men

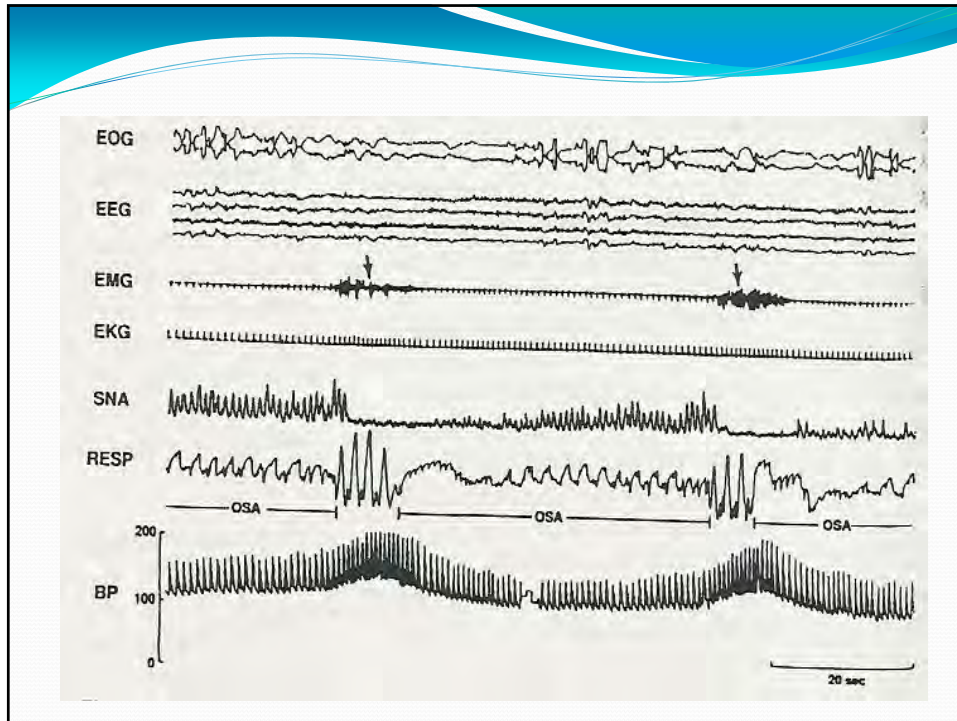
Kripke Sleep, 1997  
 USA  
 N = 355      5% Women  
                   9% Men

Olson Am J Respir Crit Care Med, 1995  
 Australia  
 N = 2,202      1% Women  
                   5% Men

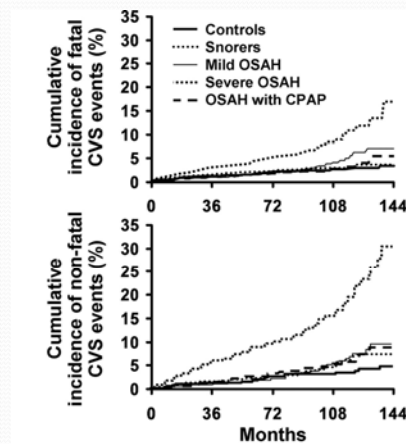
Bearpark Am J Respir Crit Care Med, 1995  
 Australia  
 N = 400      7% Women  
                   10% Men

What is the Opportunity Here ?

INPATIENT



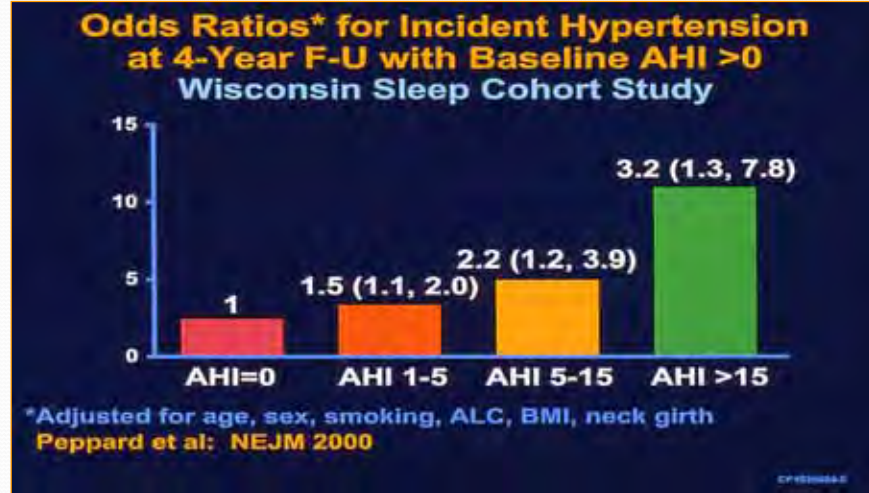
Long-term risk for cardiovascular events according to the presence of OSA and treatment with CPAP; cumulative percentage of individuals with new fatal (A) and nonfatal (B) cardiovascular events in each of the five groups studied



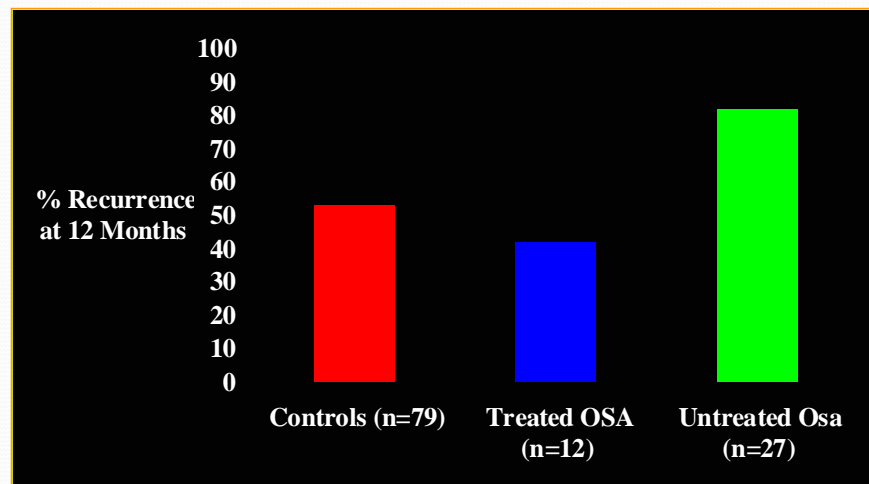
Controls	264	262	259	258
Snorers	377	372	361	232
Mild OSAH	403	401	392	264
Severe OSAH	235	229	221	167
OSA with CPAP	372	364	361	229

Lopez-Jimenez F et al. Chest 2008;133:793-804

## Wisconsin Sleep Cohort Study



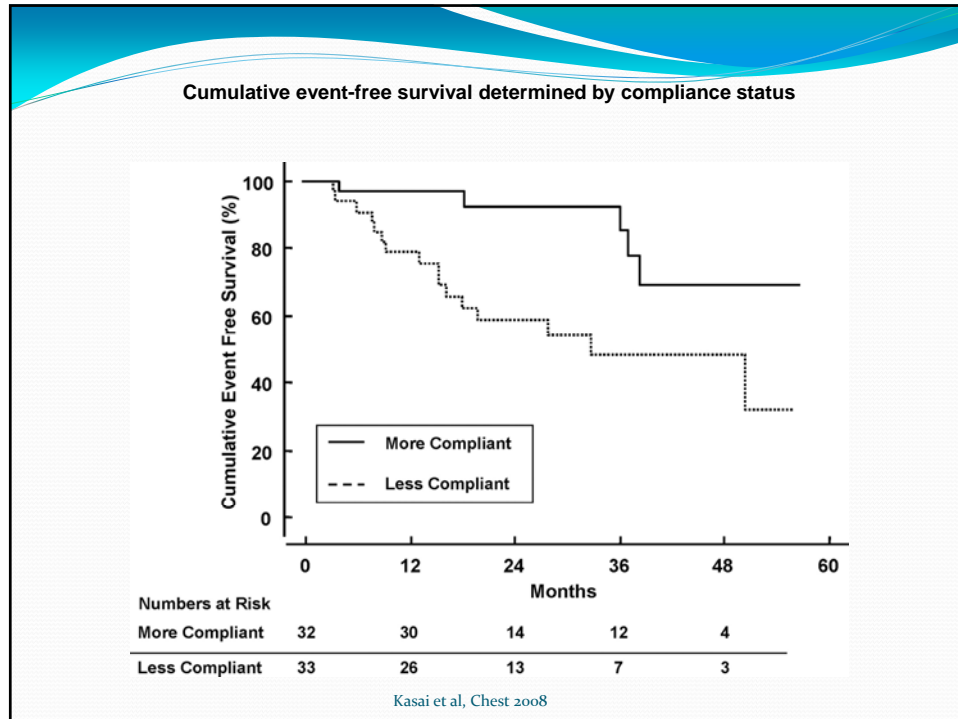
## Recurrence of Atrial Fibrillation After Cardioversion



Kanagala et al. Circ. 2003.

\*p < 0.009 compared to controls  
\*\*p < 0.013 compared to treated OSA





## COPD and Sleep

- OSA - 20% have COPD
- COPD - 10% have OSA
- Both share several comorbidities
  - Endothelial dysfunction
  - Cardiac failure
  - Diabetes
  - Metabolic syndrome

## COPD and OSA

Marin, AJRCCM 2010

- Results
  - Compared to COPD only group
    - Overlap syndrome treated with CPAP
      - No increased risk for either outcome
    - Overlap syndrome not treated with CPAP
      - Higher mortality RR 1.79 (1.16-2.77 95% CI)
      - Exacerbation RR 1.70 (1.21-2.38 95% CI)

What is the Opportunity Here ?

## Sleep and Inpatients

- General sleep
  - OSA
  - Insomnia
  - Other illnesses
- Extubation
- Underlying disease
- PAP therapy

## The ICU

- Sleep deprivation / quality
- Disturbances
- Medications
- Mechanical ventilation



## What is the Opportunity Here ?



## Sleep and Anesthesia

- Pre-operative
- Operative
- Post-operative

## Sleep and Anesthesia

- Ask the questions
- Look at the patient
- Assess your findings

## Sleep and Anesthesia

- Epworth questionnaire
- Berlin questionnaire
- Physical characteristics
  - Mallampati scale
  - Neck size
  - Retrognathia
  - Ask the right questions



## Sleep and Anesthesia

- Postoperatively
  - Inpatient v. outpatient care
  - CPAP usage
    - Setup for patients with known OSA
    - Initiation of CPAP for at-risk patients

## Sleep and Anesthesia

- Potential patient safety goals (JC)
  - Preventing postoperative complications
  - Screen patients who show signs of sleep apnea
  - Consider OSA when developing care plan
  - Develop protocol to deal with OSA (based on evidence based practices)

What is the Opportunity Here ?

# OUTPATIENT

## Sleep Disorders Medicine

- Outpatient
  - Testing
  - Patient evaluation
  - Management
- Inpatient
  - Evaluation
  - Management



## Testing

- Sleep studies
  - Setup
  - Performance
  - Mask fitting
  - Titration
  - Scoring

## Evaluation

- Evaluation prior to sleep study
  - Medical history
  - Medications
  - Examination
- Interface fitting
- Study followup

## Management

- Clinical evaluation after study
- Office setting
- Sleep clinic setting

## Newer Testing Modalities

- Portable
- “Streaming”

## Newer Therapeutic Modalities

- Servo ventilation
- Oral appliances
- Nerve stimulators

**ORIGINAL ARTICLE**

### Upper-Airway Stimulation for Obstructive Sleep Apnea

Patrick J. Strollo, Jr., M.D., Ryan J. Soose, M.D., Joachim T. Maurer, M.D., Nico de Vries, M.D., Jason Cornelius, M.D., Oleg Froymovich, M.D., Ronald D. Hanson, M.D., Tapan A. Padhya, M.D., David L. Steward, M.D., M. Boyd Gillespie, M.D., B. Tucker Woodson, M.D., Paul H. Van de Heyning, M.D., Ph.D., Mark G. Goetting, M.D., Oliver M. Vanderveken, M.D., Ph.D., Neil Feldman, M.D., Lennart Knaack, M.D., and Kingman P. Strohl, M.D. for the STAR Trial Group  
N Engl J Med 2014; 370:139-149 | January 9, 2014 | DOI: 10.1056/NEJMoa1308659



What is the Opportunity Here ?



How Do I Know I Am Competent in  
the Field ?

## What is Certification ?

- Ensure you have basic skills necessary to provide care
- Knowledge
- Skills
- Attributes

## Certification Agencies

- Board of Registered Polysomnographic Technologists (BRPT)
- National Board for Respiratory Care (NBRC)
- American Board for Sleep Medicine (ABSM)

## CPSGT Examination

- Pre-study procedures (20%)
- Study performance (40%)
- Therapeutic intervention (20%)
- Post-study procedures (10%)
- Scoring and data analysis (10%)

## RPSGT Examination

Table 1. RPSGT 2010 Examination Blueprint Domains

Domain	%*
Pre-study procedures	15
Study performance	25
Therapeutic intervention	25
Post-study procedures	10
Scoring and data analysis	25

\* These percentages reflect the number of questions in that particular domain that are on the examination.

RPSGT – Registered Polysomnographic Technologist

## SDS Examination Eligibility

- CRT or RRT
  - CoARC or CAAHEP accredited respiratory therapy program including a sleep add-on track
  
- CRT
  - Six months full time experience (21 hours/week minimum) under medical supervision (sleep diagnostics and treatment)
  
- RRT
  - Three months full time experience under medical supervision (sleep diagnostics and treatment)

## NBRC

Table 2. SDS 2010 Examination Blueprint Domains

Domain	%*
Pre-testing	12
Sleep disorders testing	30
Study analysis	31
Administrative functions	9
Treatment plan	18

\* These percentages reflect the number of questions in that particular domain that are on the examination.  
SDS – Sleep Disorders Specialist

## SLEEP TECHNOLOGIST REGISTRY (ABSM)

- Domains
  - Gathering and analyzing patient information
  - Testing preparation procedures
  - Sleep study procedures
  - Sleep study record scoring
  - Service management and professional issues

## Similarities

- Computer based testing
- Unique test forms
- Random placement of questions/answers
- Continuing certification programs



## Differences

- Examination content
- Entry v. advanced levels
- Eligibility requirements
- Costs

## Real Time Examples

## A Typical Day Sleep Disorders Center

- Followup on study completion information
- Contact patient with results
- Contact PCP with results / future management
- Setup equipment with DME company

## A Typical Day

- Office / clinic
  - Mask fitting
  - PAP adherence
  - Phone call followup
  - Evaluate patients

## Sleep Disorders Centers

Chest abstract 2010

- Patients evaluated in SDC (2008)
- N = 167
  - 150 with OSA (difficulty with compliance)
  - 17 with other diseases
- Changes in therapy (135 (90%))

• Mask refit	23%
• Decrease in PAP	17%
• Retitration study	16%
• Referral for oral appliance	5%

What is the Opportunity Here ?

## Outpatient Setting

- Office setting
- Pulmonary rehabilitation
- Home care / transition of care
- Teaching
- Research

## Outpatient Setting

- Pulmonary function testing
- Procedure lab
- Exercise testing
- Patient interaction
- Education
  - Disease state
  - Inhaler usage
  - Oxygen therapy

## What is the Opportunity Here ?

## Pulmonary Rehabilitation

- Assessment
- Exercise testing and training
- Education
- Psychosocial evaluation and management
- Outcomes assessment

## What is the Opportunity Here ?

## Transition of Care

- Pittsburgh Regional Health Initiative
- [prhi.org](http://prhi.org)
- Nurses, pharmacists, respiratory therapists
- Patient identification
- Hospital and post-hospital followup

## Transition of Care

- Outcomes
  - 30 day readmission rate 12%
  - Other data
    - pending

## Pittsburgh Regional Health Initiative

### Pittsburgh Regional Health Initiative Receives \$10.4 Million Healthcare Innovation Award from CMS

**PITTSBURGH—MAY 8, 2012** The Pittsburgh Regional Health Initiative (PRHI) is pleased to announce receipt of a \$10.4 million Health Care Innovation Award from the Center for Medicare and Medicaid Innovation (CMMI) for its Virtual Accountable Care Network Project. Under the direction of Keith T. Kanel, MD – primary investigator for the project and PRHI's Chief Medical Officer, the project builds on a PRHI-led hospital-physician pilot project that achieved a 44% reduction in readmissions for patients with chronic obstructive pulmonary disease (COPD). The findings from the pilot are currently being applied at Monongahela Valley Hospital and its aligned physicians by: (1) developing a shared, resource, hospital-based virtual patient-centered medical home – called a Primary Care

## Transition of Care

- DASH program (KlingensmithHealthCare)
- Home transition of care program
- RT driven
- Visits by RT
  - Assessment
  - Medication reconciliation
  - ADL assessment
  - Sleep assessment

## Transition of Care Results

- Implemented across 23 hospitals

<b>DASH Reduces Western PA Readmit rate by 75%</b>			
	<b>W.PA</b>	<b>DASH</b>	<b>Key Metrics</b>
<b>COPD</b>	<b>22.2%</b>	<b>&lt; 4%</b>	<b>ADL Performance Dyspnea &gt; 3 (Borg)</b>
<b>CHF</b>	<b>26.5%</b>	<b>&lt; 4%</b>	<b>SOB/O<sub>2</sub> Titration Medication usage</b>
<b>Pneumonia</b>	<b>17.0%</b>	<b>&lt; 4%</b>	<b>SOB /O<sub>2</sub> Titration Antibiotic usage</b>

Carlin BW, et al. *Chest*. 2012 (4\_MeetingAbstracts); 114A, 139A.





## What is the Opportunity Here ?



## Outpatient

- Teaching
- Research



What is the Opportunity Here ?



Where Have We Been ?  
Sleep Medicine 1980s

- Testing (in laboratory)

## Where Have We Been ? Sleep Medicine 1990s

- Testing (in laboratory)

## Where Have We Been Sleep Medicine 2000s

- Testing (in laboratory)
- Patient Evaluation / Management
- Testing (portable)

## Where Are We Going ? Sleep Medicine 2015

- Patient identification
- Evaluation
  - Testing (portable)
- Education
- Management

## What I Heard (1980s) ?

- No jobs available
- No pay available
- Same old, same old
- Sleep – what's that ?

## The Reality (2014) ?

- Jobs are available
- Pay will never be what I want
- Not the same old, same old
- Opportunities abound !!
  - Flexibility
  - Availability
  - Innovative

## Value

- Worth in usefulness or importance to the possessor; utility or merit.

## What Are The Opportunities ?

## What Are The Opportunities ?

- Earlier detection
- Diagnosis
- Management
- Outcomes assessment

## Success Strategies

Forbes 2013

- Look for the opportunity nobody else sees
- Find partners who believe in you
- It's easy to lose focus: DON'T
- Eventually you've got to say: Just Do It !





Thank you !





***THANK YOU !!***

bwcmd@yahoo.com