

Wireless Transmission of Polysomnography

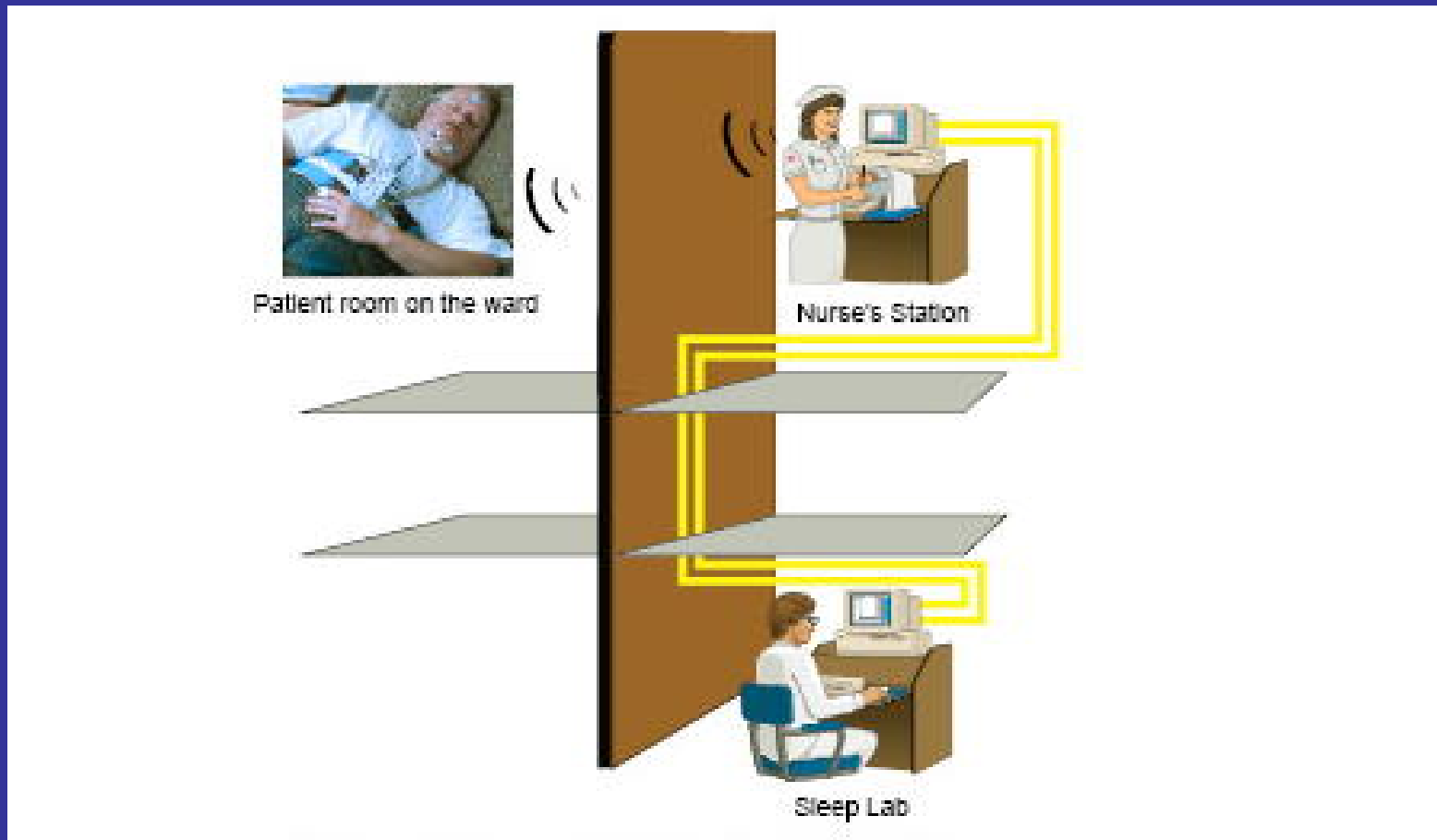
Innovations in Pulmonary and Sleep Medicine
CCF Summit

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Outline

- Engineering -
 - What is Wireless PSG?
 - Pros and Cons
- Clinical Applications –
 - Where can we use wireless PSG?
 - Results from early adopters, other sleep-related applications
- Business –
 - Future market growth

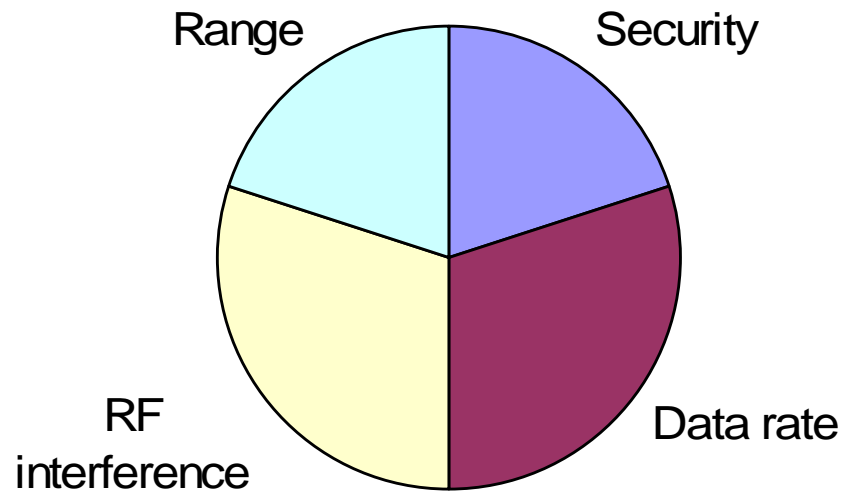
- What is Wireless PSG?



- **Benefits - *Expands the sleep lab reach:***
 - Fast setup in many environments
 - Attended sleep studies
 - Smaller equipment
 - Improves patient comfort / mobility

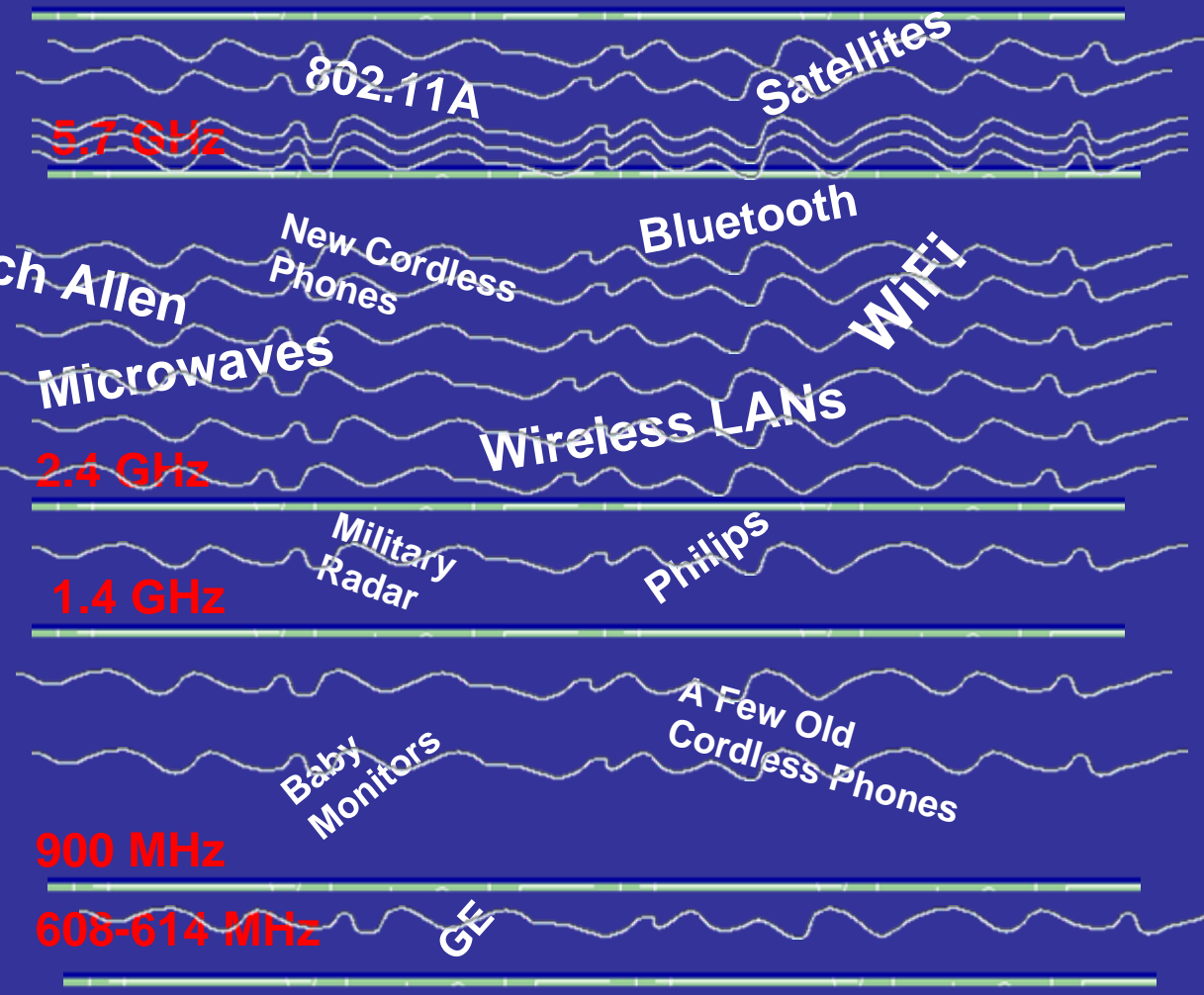
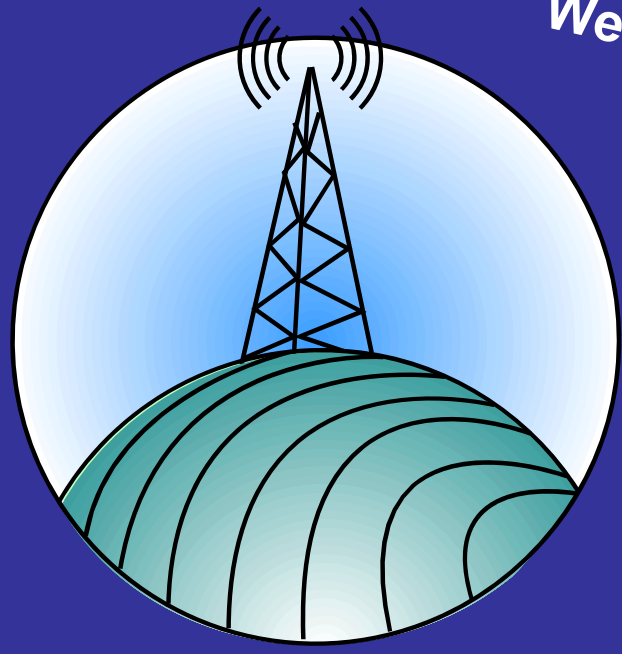
Wireless PSG

Wireless PSG - Issues



Wireless PSG

Frequency
Bands



Wireless vs. **Wired** PSG Technology

WIRELESS

- Fast Setup / no installation cost. Can take systems “anywhere”
- More comfortable for patient
- **Opens up new opportunities**
- Reliability needs to be carefully assessed for each environment
- Fewer channels

WIRED

- Rooms need to be specially configured. Additional Installation costs
- Cannot easily move equipment for bedside recordings. Limited to in-lab testing.
- Limited Patient mobility
- More channels
- No RF interference

- Wireless PSG – New Opportunities ?
 - Hospital inpatient evaluation:
 - Medical patients who are at risk of SDB
 - Post-operative SDB monitoring in step down units (bariatric,) as alternative to crowded ICU's.
 - Pre-operative SDB assessment (cardiac surgeries, etc).
 - Hotels
 - Nursing homes
 - Research (Sleep walking)
 - Patient's homes

Polysomnography Using a Wireless Network

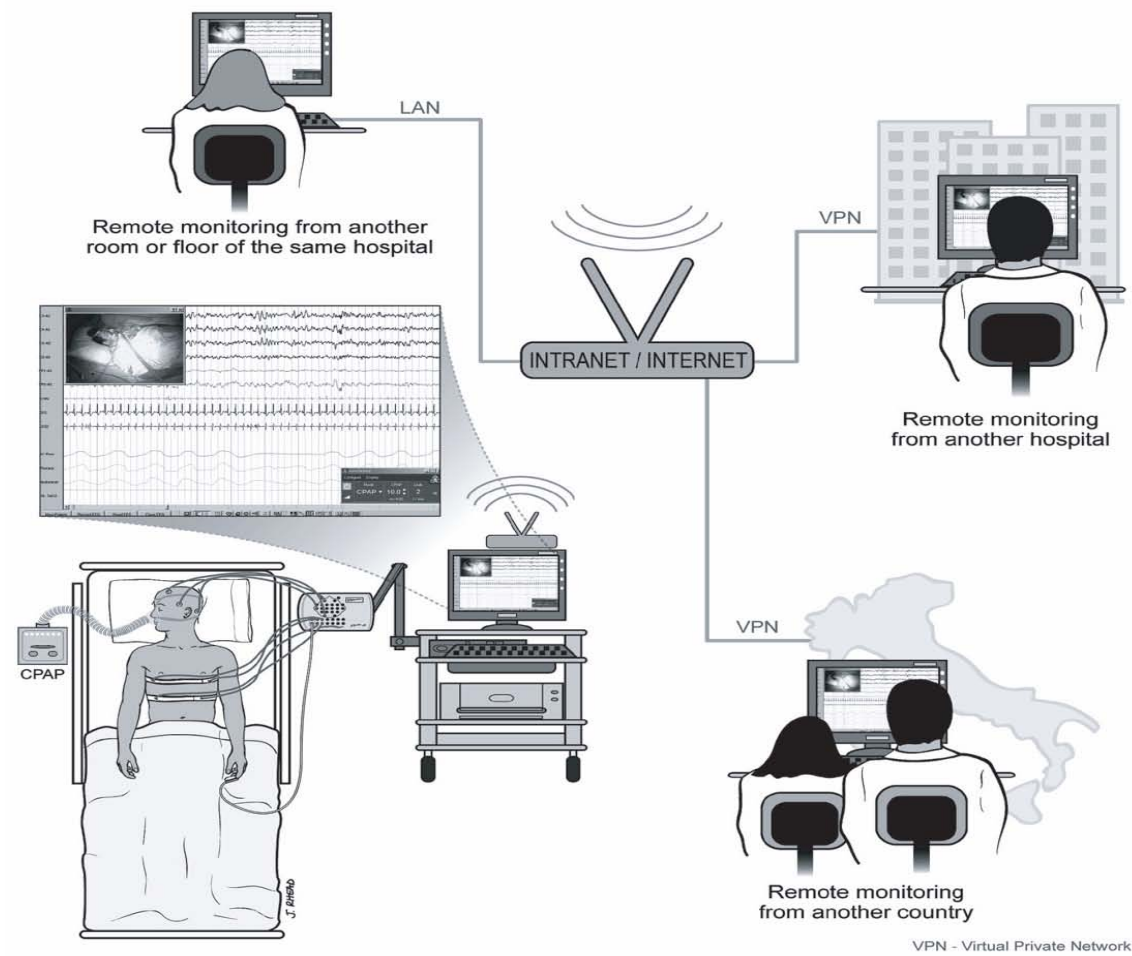


Figure 1—Schematic of Wireless Polysomnography

- Results summary:
 - SDB was almost always present (94% of patients).
 - Quantifying TST is important (SDB screening is not sufficient):
 - $AHI_{tst} = 35.9$, $AHI_{trt} = 19.4$.
 - Wireless PSG can impact outcome:
 - 48% of pts. discharged on Oxygen, 31% on CPAP
 - No major technical problems:
 - 57% of recordings were satisfactory, 43% of recordings were good.

- Inpatient PSG testing is not for everyone especially critically ill and unstable patients.
- Decision must be based on comprehensive sleep medicine consultation.

- **Projected utilization in hospitals** (all telemetry ambulatory monitoring):
 - The use of ambulatory telemetry monitors in US hospitals will double by 2011 !
 - “Multi-parameter” Telemetry is a Great Solution to Overcrowded Hospitals

- In Summary:
 - Wireless transmission of PSG can expand the reach of sleep labs to handle emerging and critical applications.