

# Investigations into and development of an intelligent decision support system and online tools to provide support for consistent sleep disorder diagnosis

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# Importance of sleep

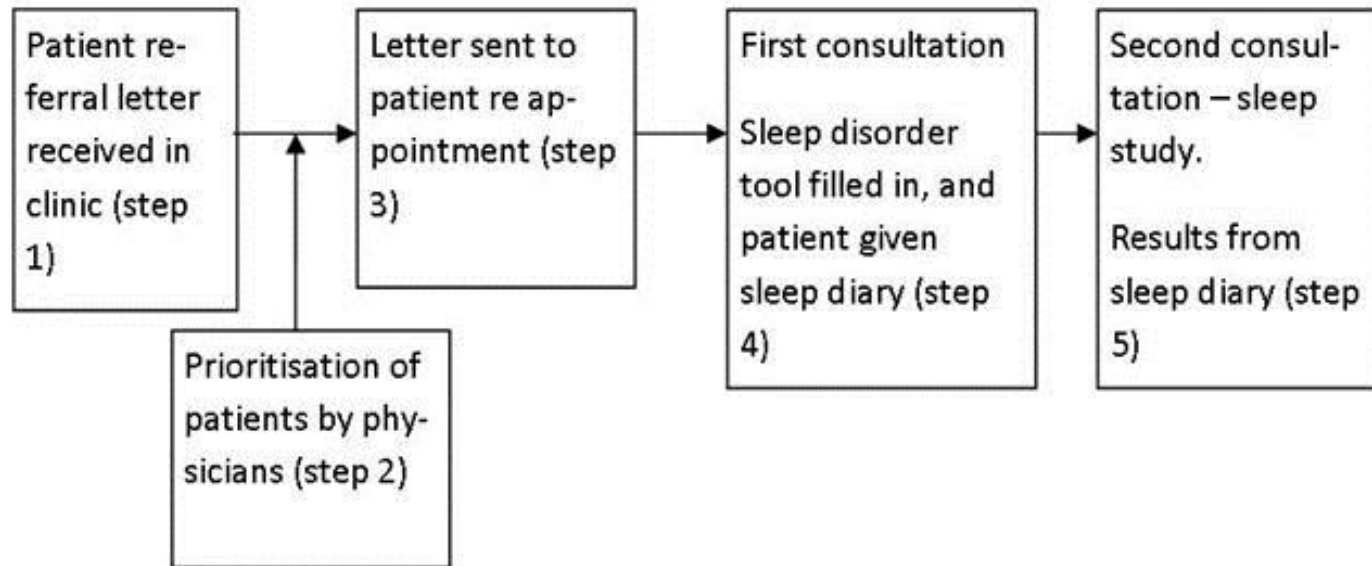
- ▶ Sleep disorders are common
- ▶ Sleep disorders: a variety of medical disorders that disrupt sleep patterns.
  - Obstructive sleep apnea
  - Narcolepsy
  - Periodic limb movement disorder or RLS
  - Hypopnoea
  - Insomnia
  - Parasomnias
  - Shift worker syndrome

# Sleep

- ▶ Excessive daytime sleepiness
  - Epworth sleepiness scale
- ▶ Sleep disorders impact on community
  - Car accidents
  - Work accidents
  - Impacts on mental and physical health



# Current consultation practise



# Justification for an online tool

- ▶ Internet administration has advantages
- ▶ Online questionnaire reliable
- ▶ Small changes on factorial structure
- ▶ Home internet rates

# Online sleep diary

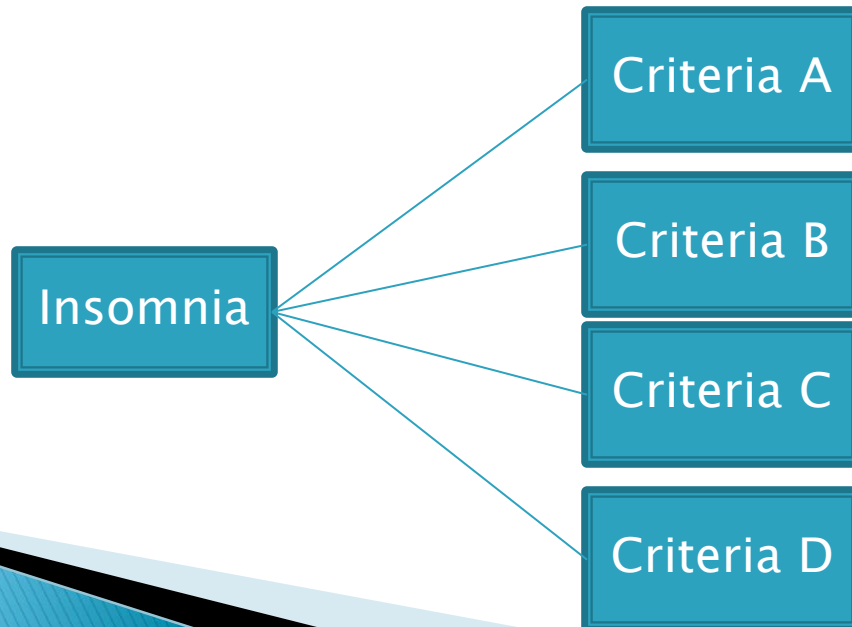
- ▶ A sleep diary is used to record sleep patterns usually for fourteen nights
- ▶ A good tool not used effectively
- ▶ Primary diagnostic tool for insomnia
- ▶ Functional analysis
- ▶ Accessible data for the physician

# Online questionnaire

- ▶ Research team
- ▶ Standard validated tool
- ▶ Redeveloped current patient history form
- ▶ Questions follow accepted international sleep disorder criteria for sleep disorders.

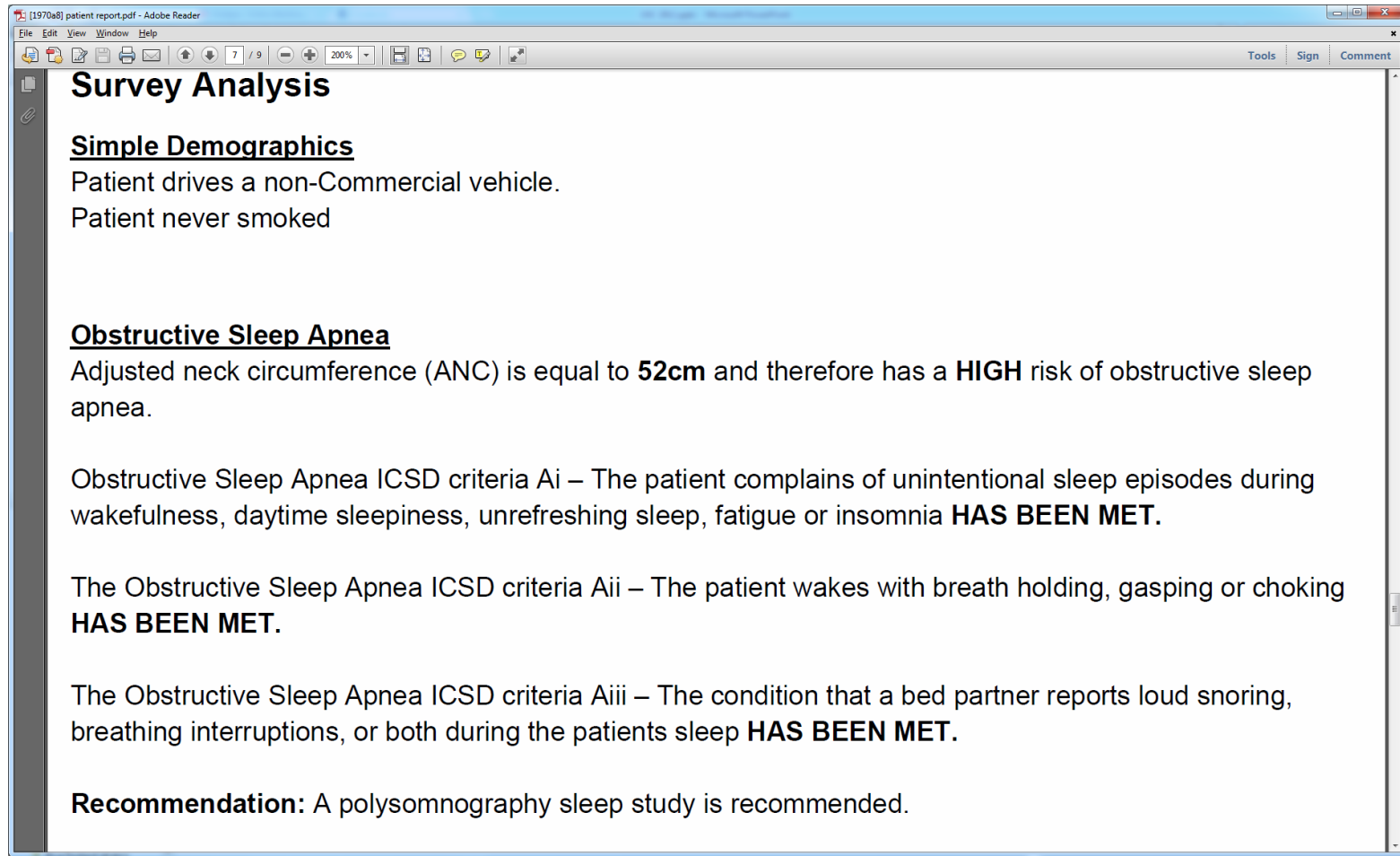
# Sleep DSS

- ▶ Transparency
- ▶ Small connected rule based systems





# Sample Report



patient report.pdf - Adobe Reader

File Edit View Window Help

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Tools Sign Comment

## Survey Analysis

### Simple Demographics

Patient drives a non-Commercial vehicle.  
Patient never smoked

### Obstructive Sleep Apnea

Adjusted neck circumference (ANC) is equal to **52cm** and therefore has a **HIGH** risk of obstructive sleep apnea.

Obstructive Sleep Apnea ICSD criteria Ai – The patient complains of unintentional sleep episodes during wakefulness, daytime sleepiness, unrefreshing sleep, fatigue or insomnia **HAS BEEN MET.**

The Obstructive Sleep Apnea ICSD criteria Aii – The patient wakes with breath holding, gasping or choking **HAS BEEN MET.**

The Obstructive Sleep Apnea ICSD criteria Aiii – The condition that a bed partner reports loud snoring, breathing interruptions, or both during the patients sleep **HAS BEEN MET.**

**Recommendation:** A polysomnography sleep study is recommended.

# Evaluation

- ▶ The physicians found the report useful and usable
- ▶ Users found the sleep tool application easy to use and understand.