AN OVERVIEW OF THE IN-LAB
MATRx TITRATION SYSTEM

Selecting the Right Patients for Oral Appliance Therapy
The MATRx system integrates with the polysomnogram to allow monitoring of the patient during a customized dental titration using temporary trays.

**Confidently Prescribe Oral Appliance Therapy**

**WHO SHOULD HAVE A MATRx STUDY?**

- Patients who are intolerant of CPAP or prefer alternate therapy
- Patients who reject CPAP or the diagnostic study up-front
- Patients who refuse surgery or are not surgical candidates

**CLINICALLY-VALIDATED, PROVEN TECHNOLOGY**

- 3 clinical trials have been completed to date
- Broad inclusion criteria (age 21-80, AHI > 10/hr-1, BMI < 40 kg/m2)
- Prospectively established predictive rules

**CLINICAL TRIAL RESULTS ON PREDICTIVE ACCURACY**

<table>
<thead>
<tr>
<th>Predicting Therapeutic Outcome</th>
<th>Therapeutic Success</th>
<th>Therapeutic Failure</th>
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<tbody>
<tr>
<td>Sensitivity</td>
<td>PPV**</td>
<td>NPV</td>
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<tr>
<td>94%</td>
<td>93% **</td>
<td>86%</td>
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**Predicting Target Protrusion**

<table>
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<tr>
<th>Effective Target Protrusion Position</th>
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<tr>
<td>PPV**</td>
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<tr>
<td>93%</td>
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</table>

Therapeutic success defined as: AHI < 10 & 50% reduction from baseline AHI

* PPV = 100% with therapeutic success defined as: AHI < 10

**In patients correctly predicted to be therapeutically successful with oral appliance therapy

**“The MATRx study offers a clear advantage for patients and doctors by eliminating guess work in treating OSA with MRDs. We can quickly and efficiently determine optimal treatment parameters with the MATRx as part of our standard treatment protocol.”**

Dr. Srujal Shah, Bay Area Dental Surgery
Understanding the MATRx Study

This case reveals that patients with both obesity and severe sleep apnea can be effectively treated with oral appliance therapy. Moreover, the therapeutic protrusive position can occur well short of the patient’s upper limit for mandibular protrusion.

### 42 year old female

Baseline AHI = 41.1  
BMI = 32.3

**Mandibular Range of Motion**

- Habitual Bte (Lower Limit) = 10mm
- Maximum Protrusion (Upper Limit) = 17.0mm

#### MATRx HYPNOGRAM

**Interval 1**

- NREM cycle; 30 minutes  
  LATERAL position  
  Effective protrusion  
  » Mandibular position 11.0–12.0mm

**Interval 2**

- REM cycle; 5 minutes  
  LATERAL position  
  Ineffective protrusion  
  » Mandibular position 12.4mm

**Interval 3**

- REM cycle; 25 minutes  
  SUPINE position  
  Effective protrusion  
  » Mandibular position 13.9–14.2mm

**Interval 4**

- REM cycle; 25 minutes  
  SUPINE position  
  Effective protrusion  
  » Mandibular position 13.7–14.5mm

**Interpretation**

- Responder to mandibular advancement in both REM supine periods (i.e. less than 2 apneas or hypopneas were observed in 5 minutes)

**THERAPEUTIC OUTCOME**

The patient was fitted with a SomnoDent® oral appliance adjusted to the target protrusive position. A therapeutic outcome study, with the appliance set at this position, revealed a decrease of the AHI to a normal value of 4.0.

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### MATRx Study Interpretation

The following criteria were used to determine if the patient was a responder to mandibular advancement (i.e. a predicted success with oral appliance therapy):

- Less than 2 apneas or hypopneas are present in a 5 minute window of REM supine
- REM lateral can be used if REM supine is not observed AND the patient is a confirmed side sleeper

#### MATRx STUDY ANALYSIS

During the study, the patient slept reasonably well (sleep efficiency = 82%) and displayed fairly normal sleep architecture with three REM cycles observed; two in the supine position. The arousal index was 20.3. Arterial oxyhemoglobin saturation was normal throughout the study. One 40 minute episode of periodic limb movements was observed. The patient was a responder to mandibular advancement in both intervals 3 and 4 (i.e. effective mandibular protrusion during REM supine was observed).

#### MANDIBULAR TITRATION SUMMARY

- **Interval 2**
  - REM cycle; 5 minutes  
  - LATERAL position  
  - Ineffective protrusion  
  - Mandibular position 12.4mm

- **Interval 4**
  - REM cycle; 25 minutes  
  - SUPINE position  
  - Effective protrusion  
  - Mandibular position 13.7–14.5mm

The effective target protrusive position was 14.5mm (i.e. 4.5 mm of protrusion from the patient’s habitual bite).
Patient Workflow

1  PATIENT SELECTION AND MATRx TRAY FITTING

- Sleep Physician identifies an OSA patient who may be a suitable candidate for oral appliance therapy
- Patient is referred to a Sleep Dentist, or trained healthcare professional, for MATRx tray preparation
- MATRx trays are fit to the patient’s bite and the mandibular range of motion is recorded

2  SINGLE-NIGHT, IN-LAB TITRATION STUDY

- MATRx and PSG systems are calibrated
- Patient’s MATRx trays are inserted in preparation for titration study
- Sleep Tech remotely titrates the patient’s mandibular position, in response to apneas and hypopneas, with a goal to eliminate these events during REM supine
- Study is scored and a PSG report is generated

3  MATRx STUDY INTERPRETATION

- Sleep Physician evaluates the MATRx study results
- If the patient is a responder to mandibular advancement, the patient is referred to a Sleep Dentist with an oral appliance therapy prescription, which includes the patient’s target protrusive position

4  ORAL APPLIANCE PRESCRIPTION AND FITTING

- Sleep Dentist uses the prescribed target protrusive position to set the patient’s therapeutic appliance to a mandibular position that will result in effective therapy

Request Your MATRx Demo Today!

- Diversify your testing capability
- Differentiate your Sleep Center by providing personalized, patient-centered care
- Remain competitive and grow your referral networks
- Increase your occupancy rates

1 877 341 8814
sales@zephyrsleep.com

For more information, visit us at: zephyrsleep.com

2. Remotely controlled mandibular protrusion during sleep predicts therapeutic success with oral appliances in patients with obstructive sleep apnea.


4. Selecting OSA patients for oral appliance therapy by mandibular protrusive titration: effect of hypopnea scoring criteria on predictive accuracy.

5. Target protrusive position from mandibular protrusion titration: Is it a good estimate of adequate protrusion? Does it correlate with RDI or BMI?

6. Mandibular protrusion during sleep predicts outcome with oral appliance therapy of sleep apnea.

7. Selection of patients for oral appliance therapy using mandibular protrusion during sleep.


9. Remotely controlled mandibular positioner predicts efficacy of oral appliances in sleep apnea.