period. At 90 days, their compliance was similar to those who did not change first masks. While changing a mask may take days/weeks out of the 90 day compliance window, compliance did not appear decreased by time taken to change to a second preferred mask. There was some evidence of increased mask replacement in Medicare or Medicaid patients.

Support (If Any): none.

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GOOD DRIVING BEHAVIOR: A REASONABLE PREDICTOR OF CPAP ADHERENCE?

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Introduction: Obstructive Sleep Apnea (OSA) has been linked to potentially dangerous driving among fatigued individuals. When OSA is diagnosed, the usual treatment offered is continuous positive airway treatment (CPAP). Adherence to CPAP treatment remains a challenge. Here, we explore what characteristics and behaviors at time of diagnosis are associated with CPAP adherence 6 months later.

Methods: Participants were 23 individuals between the ages of 25 and 70 (M=49.61), recruited from sleep clinics and were newly diagnosed with OSA by a sleep medicine specialist. At baseline, all participants completed questionnaires on driving behaviors (Driving Behaviour Questionnaire—DBQ), usual sleep experiences (Sleep Questionnaire—SQ) and general driving (General Driving Information Form—GDIF). All participants were reassessed 6 months later and self-reported CPAP treatment adherence by telephone interview. A participant was considered adherent if they reported using their treatment at least 4 hours per night, at least 80% of the time, in the 6 months preceding post-treatment testing. 14 Individuals were adherent to CPAP treatment (8 females, 6 males), and 9 individuals were non-adherent (4 females, 5 males).

Results: At baseline, means comparisons showed that the Non-Adherent group reported more near-misses (GDIF item) in the previous year (M=2.375, SD=.518) than the Adherent group (M=1.643, SD=.497, p=.006). Also, the Non-Adherent group reported worse driving behaviors in general (DBQ total score) in the previous year (M=103.375, SD=29.061) than the Adherent group (M=79.077, SD=9.169, p=.050). Lastly, The Non-Adherent group reported having more difficulty concentrating (SQ item) in the previous month (M=6.438, SD=1.499) than the Adherent group (M=4.143, SD=1.875, p=.006). All other items were not statistically significant.

Conclusion: This study may provide an added opportunity to identify potentially non-adherent patients in a clinical setting by inquiring them about driving experiences, with the goal of improving health and functional outcomes in all patients with OSA. The findings are preliminary to future research.

Support (If Any): FRQSC, SAAQ, FRQS.

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OPTIMIZING MESSAGE DELIVERY IN TELE-MONITORING TO PATIENTS AT 90 DAYS: THE TELE-OSA RANDOMIZED CLINICAL TRIAL

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Introduction: The Tele-OSA study previously reported the impact of CPAP tele-monitoring(TM) with automated patient feedback[U-Sleep; ResMed Corp] on improving 3-month CPAP adherence. We analyzed daily usage patterns to determine patient response to received messages.

Methods: Tele-OSA was a 4-arm randomized trial conducted at Kaiser Permanente sleep center(Fontana, CA) studying patients with suspected OSA. The primary outcome(3-month CPAP adherence) revealed improved use with TM but no significant impact with tele-medicine-delivered education. TM involved automatic wireless upload of CPAP data followed by automated patient messages(text, email, and/or phone) if CPAP use decreased below a defined threshold or for achieving Medicare compliance. We randomly selected 28 patients with severe OSA that received both TM and tele-education, evaluated daily usage, and tagged specific days messages were delivered.

Results: 28 subjects(75.0% male, 50.5 ± 12.0 years, AHI 49.6 ± 19.8, CPAP 90-day usage 285.0 ± 152.0 minutes, 9.2 ± 7.7 messages sent). 10 had "high" adherence(≥70% days with ≥4 hours usage); 11 had "mid" adherence(≥40 to <70%); 7 had "low" adherence(<40%).

The "High" group(AHI 53.8 ± 22.5, CPAP usage 456.9 ± 43.5 minutes, 3.2 ± 0.6 messages) showed no response to messaging. CPAP use the night after receiving a message compared to non-messaging nights increased 48%±25% vs. 48 ± 3; stayed same 0%±0% vs. 1%±1%; decreased 52%±25% vs. 51%±3%(All p=NS).

The "mid" group(AHI 46.1 ± 15.2, usage 249.1 ± 47.3 minutes, 7.5 ± 2.1 messages) had positive response to messaging. Messaging night usage increased 66%±24% vs. 43%±6%(p=0.02); same 8%±12% vs. 5.6%±4%(p=0.50); decreased 26%±27% vs. 51%±4%(p=0.02).

The "low " group(AHI 49.3 ± 23.8, usage 95.9 ± 63.9 minutes, 20.6 ± 6.4 messages) did not increase use in response to messages(28%±22% vs. 29%±16%; p=0.91). Rather, patients were more likely to maintain same usage(52 ± 32% vs. 38%±30%; p<0.01) and less likely to decrease(20%±19% vs. 34%±15%; p=0.10).

When stratifying message type in the "mid" group, negative messages(for low adherence) increased use(72%±19% vs. 43%±4%; p<0.01) while positive messaging(achieving compliance) had no clear effect(-decreased 75%±42% vs. 51%±4%, p=0.22).

Conclusion: Automated patient messaging based on CPAP use results in immediate improvement in CPAP use, primarily in those with moderate adherence. Findings may help guide future messaging protocols.

Support (If Any): American Sleep Medicine Foundation; ResMed Corp.

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MACHINE LEARNING TO PREDICT PAP ADHERENCE AND COMPLIANCE IN TELE-HEALTH MANAGEMENT

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Introduction: CPAP is the optimal treatment for obstructive sleep apnea, but is limited by low adherence. Fairview's sleep program actively tracks PAP usage and outcomes and employs tele-health coaching to improve adherence. This approach has achieved 6-month adherence rates of 71%. However, this protocol is applied uniformly and is labor-intensive, reaching some patients belatedly and contacting others unnecessarily. Machine learning can facilitate efficient contact strategies through early identification of therapy trajectories.

Methods: We constructed prediction models for compliance (≥4 hours/day ≥70% of days) and adherence (average ≥4 hours/day) at days 151–180. Compliance and adherence during days 1–30 (standard)