**Supplementary materials**

*Supplementary Data S1.*

Formula for combined mean:

xc = (m.xa + n.xb)/(m = n)

xc = combined mean

xa = first group mean

xb = second group mean

m = number of items in first set

n = number of items in second set

Formula for combined standard deviation:

σ12=√(m-1)⋅σa+(n-1)⋅σb+(m⋅n)/(m+n)⋅(x2/1+x2/2-2xaxb)m+n-1

σ12 = combined standard deviation

*Table S2. Antipsychotic medications for those without SMI, with OED*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|    | **N (%) a**   | **Min TDD**   | **Max TDD**   | **Mean TDD (SD)**   | **Mean OED TDD (SD)**   |
| Aripiprazole   | 5 (25)   | 2.5  | 45  | 11.5 (16.78)  | 7.67 (11.19)  |
| Asenapine   | 1 (4)      | 10  | 10  | 10  | 10  |
| Chlorpromazine   | 2 (8)      | 50   | 400   | 225 (175)   | 7.5 (5.83)   |
| Lurasidone   | 1 (4)      | 10   | 10   | 10   | 1.25   |
| Olanzapine   | 3 (12)   | 5   | 7.5   | 5.83 (1.18)   | 5.83 (1.18)   |
| Quetiapine   | 7 (28)   | 50   | 600   | 300 (208.74)   | 9.99 (6.96)   |
| Risperidone   | 6 (24)   | 0.25   | 1   | 0.71 (0.30)   | 2.36 (1.01)   |
| Ziprasidone   | 1  (4)      | 80   | 80   | 80   | 10   |

a % of those on an antipsychotic medication without a SMI diagnosis (N=25); one patient was prescribed two antipsychotics off label



*Figure S3:  Number of patients with Type 2 Respiratory Failure requiring NIV, relative to antipsychotic medication use.*

*Table S4. Risk of NIV use for those with Type 2 Respiratory Failure on admission to HDU, adjusted for sex, age, BMI, COPD, OSA and smoking*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable**   | **B (SE)**  | **Wald (df)**   | **p-value**   | **Odds ratio**   | **(95% CI)**   |
| Sex (female)   | 0.001 (0.38)   | 0.000 (1)   | 0.999   | 1.001   | (0.48-2.11)   |
| Age   | 0.02 (0.01)   | 2.48 (1)   | 0.12   | 1.02   | (0.995-1.05)   |
| BMI   | 0.034 (0.02)   | 3.997 (1)   | 0.046 \*  | 1.04   | (1.001-1.07)   |
| COPD   | 0.82 (0.397)   | 4.28 (1)   | 0.039 \*  | 2.27   | (1.04-4.96)   |
| OSA   | 1.18 (0.55)   | 4.66 (1)   | 0.03 \*  | 3.27   | (1.12-9.58)   |
| Smoking (current or past)   | -0.07 (0.46)   | 0.02 (1)   | 0.88   | 0.93   | (0.38-2.31)   |
| Antipsychotic medication  | 1.58 (0.77)   | 4.21 (1)  | 0.04\*  | 4.87  | (1.07-22.11)   |

\*p<.05