Characterization of ADHD pharmacotherapy use in a tertiary inpatient program for concurrent disorders.

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Background

- Attention Deficit Hyperactivity Disorder (ADHD) is associated with increased risk of developing substance use disorders (SUD) and is found in up to 23% of SUD patients
- The Self-Medication Hypothesis theorizes that individuals with mental health disorders may utilize illicit substances in order to address their various symptoms
- Management of ADHD symptoms (eg. impulsivity) with stimulants (eg. methylphenidate) or non-stimulants (eg. atomoxetine) may reduce poor outcomes in those with concurrent substance use disorders – however, data on the impact of therapy on treatment outcomes is lacking
- The Burnaby Center for Mental Health and Addiction (BCMHA) is a tertiary mental health facility providing integrated treatment for adults with severe concurrent mental health and substance use disorders – prior data showed the mean relapse frequency to be 2.1 per patient/100 days of stay and mean AWOL (absent without official leave) frequency to be 1.3 per patient/100 days of stay

Objectives

- To examine impact of different types of ADHD pharmacotherapy on treatment outcomes in patients with SUDs
- To characterize the prescribing practices of ADHD pharmacotherapy for patients with symptoms of apparent ADHD at BCMHA

Methods

- **Design:** Retrospective single-site chart review of electronic records (consult/progress notes, admission/discharge notes, nursing notes, medication dispensing records)
- **Sample Size:** Convenience sample size of 48 patients admitted between Jan 01 2017 and Jun 30 2019
- **Inclusion Criteria:** Patients admitted to BCMHA (adult with concurrent substance addiction and complex mental health disorder) who received ADHD pharmacotherapy during their stay
- **Exclusion Criteria:** Same patient re-admissions
- **Outcomes:**
  - Mean frequency of relapse (to any substance) per patient per 100 days of stay
  - Mean frequency of AWOL per patient per 100 days of stay
  - Frequency of prescription and mean of maximum doses utilized for each ADHD medication
- **Analysis:** Descriptive Statistics

Results

Table 1. Patient Characteristics

	Stimulant (n = 26)	Non-Stimulant (n = 22)	Overall (n = 48)
Mean Age – yrs (min-max)	31 (19-48)	33 (22-59)	30 (19-59)
Male – no. (%)	17 (65.4)	13 (59.1)	30 (62.5)
Mean Length of Stay – days	160	124	144
ADHD Dx on Admission – no. (%)	15 (57.7)	13 (59.1)	28 (58)
ADHD Rx on Admission – no. (%)	8 (30.8)	5 (22.7)	13 (27.1)
ADHD Dx on Discharge – no. (%)	15 (57.7)	17 (77.3)	32 (66.7)
ADHD Rx on Discharge – no. (%)	19 (73.1)	19 (86.4)	38 (79.2)
Psychotic Illness – no. (%)	23 (88.5)	16 (72.7)	39 (81.3)
Antipsychotic Rx – no. (%)	24 (92.3)	19 (86.4)	43 (89.6)
Opioid Use Disorder – no. (%)	19 (73.1)	15 (68.2)	34 (70.8)
Opioid Agonist Therapy – no. (%)	12 (46.2)	5 (22.7)	17 (35.4)

Figure 2. ADHD Medications Prescribed

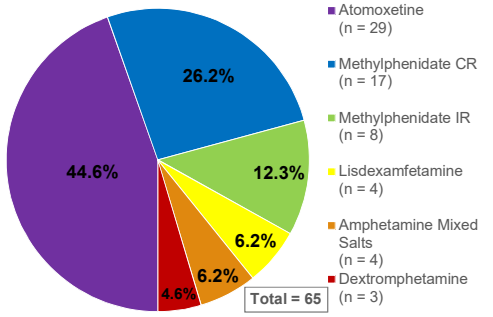

Table 2. Last Prescribed Doses (at discontinuation or discharge)

Medication	Min (mg)	Max (mg)	Mean [mg (SD)]	% Max Daily Dose*
Atomoxetine	40	100	64.1 (21.1)	64.1%
Methylphenidate CR	18	72	50.8 (18.0)	47.0%
Methylphenidate IR	5	120	58.1 (31.7)	58.1%
Lisdexamfetamine	30	70	50.0 (16.3)	71.4%
Amphetamine Mixed	15	50	31.3 (16.5)	62.6%
Dextroamphetamine	40	50	43.3 (5.8)	86.6%

Based on recommendations by the Canadian ADHD Alliance (CADDRA)

Figure 1. Mean Relapse/AWOL Frequencies by Treatment Type

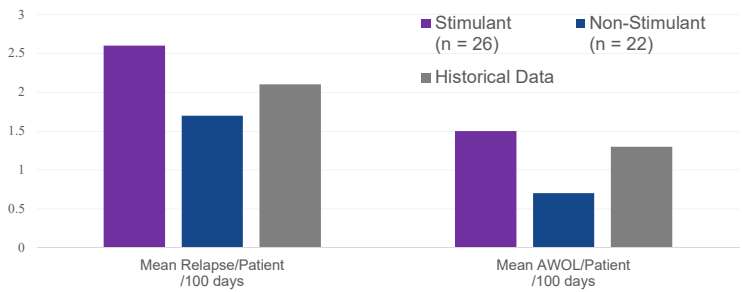

Table 3. Characterization of Medication Prescribing and Responses

	ATO	MPH CR	MPH IR	LIS	AMP	DEX
Rx on Admission – no. (%, n = 13)	8 (61.5%)	0	4 (30.8%)	0	0	1 (7.7%)
Rx on Initial Trial* – no. (%, n = 34)	18 (52.9%)	9 (26.5%)	4 (11.8)	2 (5.9%)	0	1 (2.9%)
Rx on Discharge – no. (%, n = 38)	20 (52.6%)	8 (21.1%)	3 (7.9%)	2 (5.3%)	3 (7.9%)	2 (5.3%)

ATO = atomoxetine, MPH CR = methylphenidate controlled release, MPH IR = methylphenidate immediate release, LIS = lisdexamfetamine, AMP = amphetamine mixed salts, DEX = dextroamphetamine

**In patients not taking ADHD medication on admission*

Limitations

- Data limited by retrospective, electronic chart review and small sample size
- Relapse/AWOL-based outcome does not capture impact on overall functioning (eg. engagement in treatment, improvement in ADLs)
- Severity of ADHD symptoms, substance use disorders and comorbidities not captured – patients' burden of diseases may impact prescriber's treatment choice (ie. stimulant vs. non-stimulant) and individual risk of relapse/AWOL prior to treatment

Conclusions

- Atomoxetine is the most frequently prescribed ADHD medication at BCMHA – however there appears to be an overall lack of standardization amongst prescribers in terms of medication choice and dosing, with potential underutilization of optimal doses of available ADHD pharmacotherapy
- Patients receiving non-stimulant therapy appeared to have lower frequency of relapses to substance use and AWOLs compared to stimulant therapy