

# Evaluation of pharmacist interventions in patients with substance use disorder and mental illness managed through a collaborative telehealth educational model

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- Background:**
- Separation of rural primary care providers from urban academic medical centers
  - Differences in medical knowledge and clinical practice across the country
  - Project Extension for Community Healthcare Outcomes (ECHO) is a telehealth educational model
  - Collaborative case management between teams at the specialty “hub” and the distant site “spokes”
  - No current literature assesses the impact of individual team member roles
  - Patients with dual diagnoses of substance use disorder and mental illness are particularly challenging for distant site providers to manage

**Purpose:** To evaluate the role of a clinical pharmacist on a collaborative telehealth ECHO for adult patients with substance use disorder and mental illness

- Methods:**
- Retrospective, single-site, cross-sectional, pilot study
  - Inclusion Criteria:
    - ≥ 18 years old
    - Incarcerated or
    - Residing in a post-incarceration prerelease program or
    - Discharged from prerelease program into the community after being presented at the telehealth ECHO
    - Case presented at Corrections Collaborative teleECHO™ between March 1, 2016 and January 9, 2018
    - Any mental illness diagnosis plus
  - Exclusion Criteria
    - No medication recommendations were made during the ECHO
  - Outcomes
    - Primary: Number and type of medication recommendations made during the ECHO. Drug therapy problems (DTPs) categorized as: adherence, appropriateness, effectiveness, and safety.
    - Secondary:
      - Number and type of medication recommendations made for:
        - Different mental illness diagnoses
        - Different types of substance use disorders
      - Trends in DTPs identified over time
  - Statistics
    - Sample size: 95 subjects, 80 included
    - Descriptive statistics

Categories	Subcategories
Adherence	• Non-adherence
Appropriateness	• Additional medication required • Indication required • Unnecessary medication
Effectiveness	• Consider different medication • Dose too low
Safety	• Adverse event occurrence • Dose too high

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**\*\*see reverse side for results\*\***

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**Discussion:**

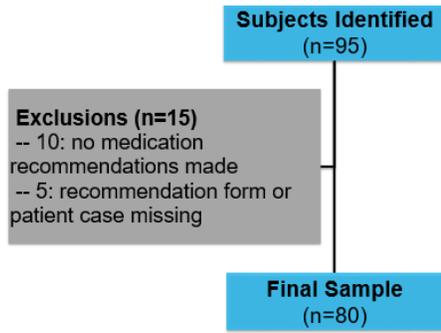
- Females more likely to have medication recommendations
  - Possibly due to higher quantity of diagnoses and medications
  - More likely to be prescribed medications
- Significantly higher ACE scores in female population
- Most common type: Appropriateness
- No statistical difference:
  - Types of DTPs between sexes
  - Number of DTPs between mental illness diagnoses and substance use disorders
- Significant association:
  - Personality disorder and appropriateness
  - Effectiveness in patients prescribed antidepressants or antipsychotics
    - Consideration to appropriate doses (too low)
    - Suggestions of alternative agents
  - Safety in patients prescribed antidepressants
    - Consideration to appropriate doses (too high)
    - Identification of adverse drug reactions and side effects
- Limitations
  - Cross-sectional study
    - Unknown outcome of recommendations
  - Unconfirmed diagnoses in some cases
    - Non-psychiatrist provider
    - Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)
  - Patient case forms completion by non-medical personnel
    - Not medical facilities

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**Conclusion:**

- Approximately 30% of total recommendations are related to medications
- Females may be more likely to have DTPs
- Consider effectiveness of antidepressants and antipsychotics
  - Alternative agents or too-low doses
- Consider safety of antidepressants
  - Adverse drug reactions or too-high doses

## Results



Characteristic	All (n=80)	Males (n=26)	Females (n=54)	P Value
Age (years), mean ± SD	36.5 ± 10.5	34.6 ± 10.7	37.5 ± 10.4	0.253
Female, n (%)	54 (67.5)	0 (0)	54 (100)	---
Medications, mean ± SD	3.6 ± 3.6	2.2 ± 2.5	4.3 ± 3.9	<b>0.012</b>
Mental Illness Diagnoses, mean ± SD	2.4 ± 1.2	1.5 ± 0.9	2.9 ± 1.1	<b>&lt;0.001</b>
Substance Use Diagnoses, mean ± SD	2.3 ± 1.2	2.1 ± 1.1	2.5 ± 1.2	0.188

Assessment Scales, mean ± SD	All (n=80)	Males (n=26)	Females (n=54)	P Value
Adverse Childhood Experiences (ACE), n=58 (72.5%)	4.2 ± 3.1	1.8 ± 2.2	5.2 ± 3	<b>&lt;0.001</b>
Patient Health Questionnaire-9 (PHQ-9), n=6 (7.5%)	10.2 ± 9.1	4 ± 0	11.4 ± 9.6	--
Generalized Anxiety Disorder-7 (GAD-7) n=6 (7.5%)	10.8 ± 9.7	0 ± 0	10.8 ± 9.7	--

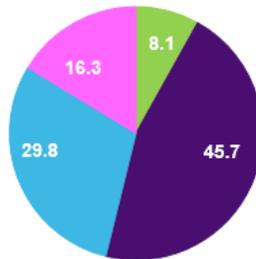
Figure 1. Study Subjects

Table 1. Baseline Characteristics

Table 2. Baseline Characteristics, cont. (Assessment Scales)

Mental Illness Diagnoses, n (%)	All (n=80)	Males (n=26)	Females (n=54)	P Value
Post-Traumatic Stress Disorder (PTSD)	45 (56.3)	3 (11.5)	42 (77.8)	<b>&lt;0.001</b>
Personality Disorder (PD)	36 (45)	8 (30.8)	28 (51.9)	0.077
Bipolar Disorder (BD)	26 (32.5)	8 (30.8)	18 (33.3)	0.819
Attention Deficit Hyperactivity Disorder (ADHD)	16 (20)	9 (34.6)	7 (13)	<b>0.023</b>
Mood Disorder Not Otherwise Specified (NOS)	16 (20)	1 (3.9)	15 (27.8)	<b>0.012</b>
Major Depressive Disorder (MDD)	14 (17.5)	7 (26.9)	7 (13)	0.124
Generalized Anxiety Disorder (GAD)	12 (15)	1 (3.9)	11 (20.4)	0.053
Other	9 (11.3)	1 (3.9)	8 (14.8)	0.146

Recommendation Types



■ Adherence ■ Appropriateness ■ Effectiveness ■ Safety

Recommendation Types	
Total = 258, n (%)	
Adherence	21 (8.1)
Appropriateness	118 (45.7)
Effectiveness	77 (29.8)
Safety	42 (16.3)

	All (n=80)	Males (n=26)	Females (n=54)	P Value
<b>Number of Recommendations, mean ± SD</b>				
Total	9.4 ± 3.7	10 ± 3.4	9 ± 3.8	0.253
Medication-Related	3.2 ± 1.5	2.6 ± 1.5	3.4 ± 1.5	<b>0.023</b>

	All (n=80)	Males (n=26)	Females (n=54)	P Value
<b>Types of Recommendations, n (%)</b>				
Adherence	19 (23.8)	8 (30.8)	11 (20.4)	0.306
Appropriateness	63 (78.8)	18 (69.2)	45 (83.3)	0.149
Effectiveness	56 (70)	17 (65.4)	39 (72.2)	0.532
Safety	28 (35)	7 (26.9)	21 (38.9)	0.293

Table 3. Baseline Characteristics, cont. (Mental Illness Diagnoses)

Figure 2, Table 4, and Table 5. Recommendation Types

Diagnosis	≥1 Appropriateness Recommendation, n (%)	P Value
ADHD (n=16)	13 (81.3)	0.785
BD (n=26)	22 (84.6)	0.374
GAD (n=12)	10 (83.3)	0.674
MDD (n=14)	11 (78.6)	0.986
Mood Disorder NOS (n=16)	12 (75)	0.682
PD (n=36)	32 (88.9)	<b>0.045</b>
PTSD (n=45)	37 (82.2)	0.389

Diagnosis	≥1 Effectiveness Recommendation, n (%)	P Value
Antidepressants (n=50)	41 (82)	<b>0.003</b>
Antipsychotics (n=14)	13 (92.9)	<b>0.04</b>
Anxiolytics (n=31)	22 (71)	0.881
Mood Stabilizers (n=19)	13 (68.4)	0.863
Adjunctive Agents (n=1)	1 (100)	0.51
Other Medications (n=40)	31 (77.5)	0.143

Diagnosis	≥1 Safety Recommendation, n (%)	P Value
Antidepressants (n=50)	23 (46)	<b>0.008</b>
Antipsychotics (n=14)	7 (50)	0.195
Anxiolytics (n=31)	13 (41.9)	0.301
Mood Stabilizers (n=19)	8 (42.1)	0.457
Adjunctive Agents (n=1)	0 (0)	0.46
Other Medications (n=40)	18 (45)	0.061

Tables 6, 7, and 8. Significant Associations