



## *Evaluation of Low Dose Quetiapine*

Cory C. Grzesik, PharmD

PGY 2 – Psychiatry Resident

MUSC Medical Center and College of Pharmacy Residency Program

# Background on Low Dose Quetiapine

---

- Utilized for unapproved indications
  - Only ~30% of patients had approved indication
- Frequently utilized at low doses
  - ~71% of doses  $\leq$  300 mg/day
- Commonly used with other antipsychotics

- FDA approved indications for quetiapine
  - Schizophrenia
  - Bipolar disorder
    - Acute mania
    - Depressive episodes

# Objectives

---

- **Primary Objective**
  - Assess indication(s) for low-dose quetiapine ( $\leq 400$  mg) on adult inpatient psychiatric services
  
- **Secondary Objectives**
  - Identify other agents utilized with quetiapine
  - Determine duration of quetiapine therapy
  - Evaluate incidence of orthostasis with quetiapine
  - Examine cost of therapy versus reasonable alternatives



- 
- MUSC—700 bed medical center
  - IOP—100 bed psychiatric hospital
    - Adolescent, adult, geriatric treatment
    - Average length of stay—7 days
    - Average annual admissions—3600

- Retrospective review

Inclusion Criteria	Exclusion Criteria
Admitted to MUSC IOP	Patients < 18 years old
Received quetiapine at any time from January 1, 2007 to October 15, 2007	Quetiapine $\geq$ 400 mg/day

# Methods

## Data Collected

---

- Admission and discharge dates
- Discharge with quetiapine Rx
- Dosing frequency and total dose
- Concomitant medications
- Rationale for therapy
- Orthostatic vital signs
- Diagnosis
- Age

# Results

**Patients Who Received Quetiapine  
(n= 572)**



**109 Pediatric Records Excluded  
(n=463)**



**216 Records > 400 mg/day  
Excluded  
(n=247)**



**Low Dose ( $\leq 400$  mg) Quetiapine  
Records Analyzed  
(n=247)**

# Results

## Demographics

---

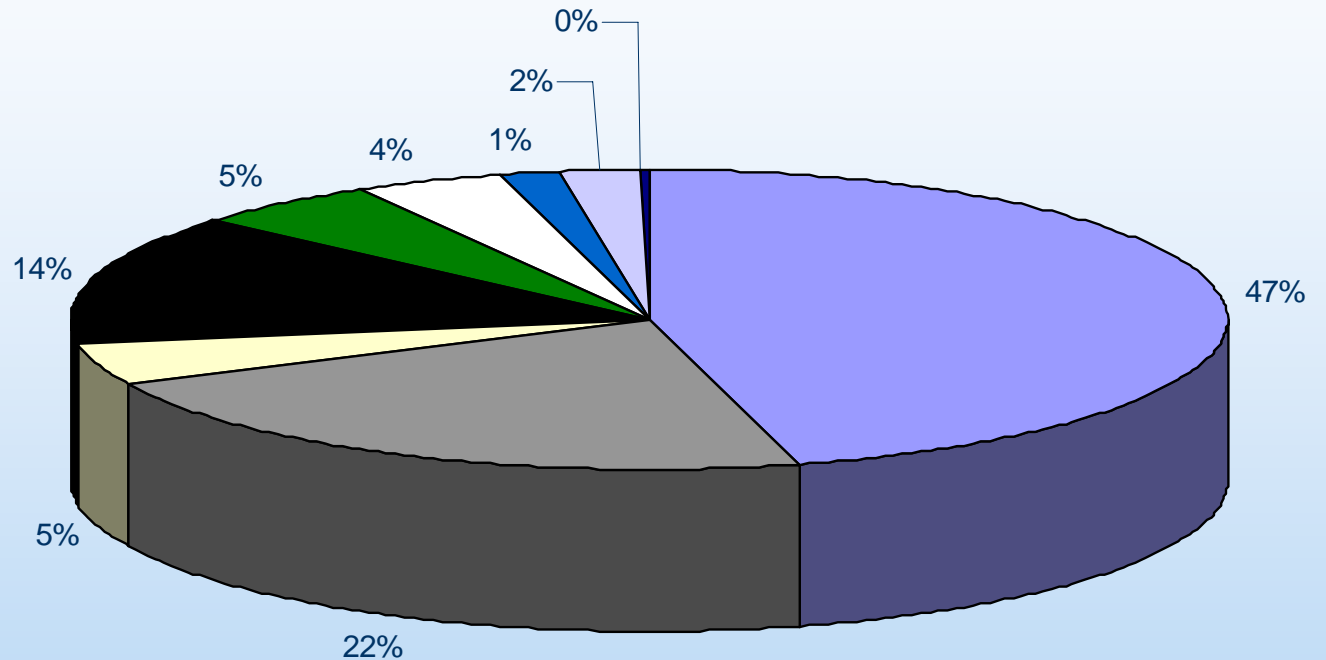
<b>Demographic</b>	<b>(n=247)</b>
	<b>Mean</b>
Age	48.7 years
Length of stay	9.8 days
Time to first dose	2.1 days
Average duration of therapy	5.2 days
Average number of doses	8.1

# Results

## Indication for Quetiapine

Rationale for Quetiapine	n=247	
	Total No. of Doses	Average Dose
Agitation	696 (22.9%)	76 (30.8%)
Sleep	645 (21.2%)	69 (27.9%)
Psychosis	451 (14.9%)	70 (28.3%)
Anxiety	365 (12.0%)	50 (20.2%)
Mood Stabilizer	388 (12.7%)	35 (14.2%)
On as Outpatient	194 (6.4%)	28 (11.3%)
Not Stated	175 (5.8%)	23 (9.3%)
Depression	39 (1.3%)	8 (3.2%)
PTSD	58 (1.9%)	6 (2.4%)
Mania	16 (0.5%)	3 (1.2%)
<b>Total</b>	<b>3034</b>	<b>205</b>

## Concomitant Sleep Medications



None

Trazodone

Ramelteon

Diphenhydramine

Zolpidem

Hydroxyzine

Mirtazapine

Benzodiazepine

Chloral Hydrate

# Cost Comparison For Sleep

<u>Agent</u>	<u>Dose</u>	<u>AWP in US Dollars</u>	<u>Agent</u>	<u>Dose</u>	<u>AWP in US Dollars</u>
Zolpidem	10 mg	4.64			
Mirtazapine	15 mg	2.72		25	2.58
Lorazepam	2 mg	1.19		50	4.24
Zaleplon	8 mg	1.11	Quetiapine	100	4.43
Chloral Hydrate	500 mg	1.00		200	8.35
Temazepam	15 mg	0.87		300	10.95
Clonazepam	1 mg	0.91		400	12.87
Hydroxyzine	50 mg	0.32			
Trazodone	50 mg	0.42			
Diphenhydramine	25 mg	0.13			

# Cost Comparison For Sleep

- 200 mg average dose utilized for sleep
- 774 quetiapine doses anticipated to be dispensed for sleep over 12 month period
- \$8.35 for 200 mg quetiapine tablet
- \$0.13 for 25 mg diphenhydramine capsule

<u>Agent</u>	<u>Anticipated # of Doses</u>	<u>AWP per Dose (US dollars)</u>	<u>Estimated Total Yearly Cost (US dollars)</u>
Quetiapine	774	8.35	6,463
Diphenhydramine	774	0.13	101
<b>Total Cost Savings</b>			<b>6,362</b>

# Cost Comparison For Anxiety

<u>Agent</u>	<u>Dose</u>	<u>AWP in US Dollars</u>	<u>Agent</u>	<u>Dose</u>	<u>AWP in US Dollars</u>
Zolpidem	10 mg	4.64			
Mirtazapine	15 mg	2.72		25	2.58
Lorazepam	2 mg	1.19		50	4.24
Zaleplon	8 mg	1.11	Quetiapine	100	4.43
Chloral Hydrate	500 mg	1.00		200	8.35
Temazepam	15 mg	0.87		300	10.95
Clonazepam	1 mg	0.91		400	12.87
Hydroxyzine	50 mg	0.32			
Trazodone	50 mg	0.42			
Diphenhydramine	25 mg	0.13			

# Cost Comparison For Anxiety

- 200 mg average dose utilized for anxiety
- 438 quetiapine doses anticipated to be dispensed over 12 month period
- \$8.35 for 200 mg quetiapine tablet
- \$1.19 for 2 mg lorazepam tablet
- \$0.32 for 50 mg hydroxyzine capsule

Agent	Anticipated # of Doses	AWP per Dose (US dollars)	Estimated Total Yearly Cost (US dollars)
Quetiapine	438	8.35	3657
Lorazepam	438	1.19	521
<b>Total Cost Savings</b>			<b>3136</b>
Hydroxyzine	438	0.32	140
<b>Total Cost Savings</b>			<b>3517</b>

# Results

## Concomitant Antipsychotic Use

n=129 (52.2%)

<u>Antipsychotic</u>	<u>No. of Other Antipsychotics Administered (n,%)</u>
Haloperidol	68 (38.5%)
Risperidone	41 (23.2%)
Olanzapine	28 (15.8%)
Ziprasidone	16 (9.0%)
Aripiprazole	7 (4.0%)
Chlorpromazine	6 (3.4%)
Fluphenazine	5 (2.8%)
Clozapine	3 (1.7%)
Perphenazine	1 (.55%)
Trifluoperazine	1 (.55%)
Thioridazine	1 (.55%)
Total Number Administered	177

## Results Orthostasis

Average Systolic Blood Pressure (SBP) Sitting	Average SBP Standing
122	119

Average Diastolic Blood Pressure (DBP) Sitting	Average DBP Standing
69	69

Average Heart Rate (HR) Sitting	Average HR Standing
83	93

### # Orthostatic

- >10 mmHg drop in SBP
  - 30% (n=31) patients
- > 10 bpm increase in HR
  - 45% (n=46) patients
- >10 mmHg drop in DBP
  - 13% (n=13) patients
- Total: 26% (n=64) orthostatic

- 
- Small sample size
  - Single center design
  - Lack of post quetiapine follow-up
  - Missing data
  - Retrospective design

# Study Conclusion

- Low dose quetiapine commonly used to treat agitation, psychosis, and sleep
  - Average dose: 205 mg
- 52% of patients were on other antipsychotics
- Average duration of therapy: 5.2 days
- Orthostasis occurred in 26% of patients
- Quetiapine is significantly more expensive for the treatment of sleep and anxiety

- Education concerning appropriate use
- Encourage antipsychotic monotherapy
- Cost considerations with low dose quetiapine
  - Limit use of low dose quetiapine
  - Limit indications
- Assess quetiapine use and risk of falls

# Acknowledgements

---

- Amy M. VandenBerg, PharmD, BCPP
  - Medical University of South Carolina
  - Institute of Psychiatry



# *Evaluation of Low Dose Quetiapine*

Cory C. Grzesik, PharmD

PGY 2 – Psychiatry Resident

MUSC Medical Center and College of Pharmacy Residency Program

# Reference

- 
- Philip NS, Mello K, Carpenter LL, Tyrka AR, Price LH. Patterns of quetiapine use in psychiatric inpatients: an examination of off-label use. *Ann Clin Psychiatry*. 2008 Jan-Mar;20(1):15-20.
  - Seroquel® [package insert]. Wilmington, DE: AstraZeneca; 2007,2008.