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Geriatric Mental Health: Pharmacologic Intervention

CMS Regulations

- Appropriate diagnoses for antipsychotics
  - Schizophrenia/Schizoaffective disorder
  - Tourette’s disorder
  - Huntington’s disease

(CMS, 2013)
Diagnoses which may be appropriate for antipsychotics (CMS, 2013)
- Schizophreniform disorder
- Delusional disorder
- Mood disorders with psychotic features
- Medical illnesses with psychotic symptoms
- Hiccups
- Nausea and vomiting associated with cancer or chemotherapy

Inappropriate indications for antipsychotics (CMS, 2013)
- Wandering
- Poor self-care
- Restlessness
- Impaired memory
- Mild anxiety
- Insomnia
- Inattention to surroundings
- Sadness or crying
- Fidgeting or nervousness
- Uncooperativeness with care
### CMS Regulations

- Antipsychotics may be used without appropriate diagnosis if: (CMS, 2013)
  - Medical, physical, functional, psychological, emotional, social, and environmental causes have been identified and addressed and in the plan of care
  - Behaviors present a danger to self or others AND
  - The symptoms are identified as being due to mania or psychosis

### Background

- 11% of Americans over the age of 65 and 14% over the age of 71 have dementia (Alzheimer's Association, 2014)
- The prevalence of dementia increases with age to 37.4% in Americans over 90 years old (Plassman et al., 2007)
- 30 to 50% of the approximate 5.2 million individuals with dementia will suffer from psychosis and agitation (Ballard et al., as cited in Seitz et al., 2011)
Significance

- Up to 33% of skilled nursing facility (SNF) residents are prescribed antipsychotic medications (APM) for neuropsychiatric symptoms (NPS) (Huybrechts et al., 2012b)

- APM are prescribed more often than other psychotropic medications for psychosis and agitation (Gurvich & Cunningham, 2000; Huybrechts et al., 2012b; Seitz et al., 2011)

- APM are frequently prescribed and often the first line treatment for NPS associated with dementia (Ballard, Waite, & Birks, 2012; Declercq et al., 2009; Gurvich & Cunningham, 2000; Huybrechts et al., 2012a; Motsinger, Perron, & Lacy, 2003; Pariente et al., 2012; Schneider et al., 2006)

Significance (cont.)

- Participants exposed to APMs were more than twice as likely to suffer a myocardial infarction (MI) than those not exposed (Pariente et al., 2012)

- Crude death rates associated with the prescription of individual APMs range from 18.6 to 45.8 per 100 person years (Huybrechts et al., 2012a; Kales et al., 2012)

- APMs are associated with a 54% increase in death (Maher et al., 2011; Schneider, Dagerman, & Insel, 2005)
Significance (cont.)

- APMs are not approved for use in patients with dementia (United States Food and Drug Administration, 2010)
- The FDA has issued a black box warning regarding the use of APM in treating dementia behaviors (United States Food and Drug Administration, 2010)
- SNFs are being cited by Centers for Medicare and Medicaid (CMS), with some losing Medicare and Medicaid certification, because of inappropriate use of APMs

Protocol Purpose

To reduce the prescription of APM in the treatment of NPS associated with dementia through the introduction of an evidence based practice (EBP) protocol establishing a hierarchy of psychotropic medications based on risk and efficacy.
### Review of literature

### Level of Evidence: APM

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Study</th>
<th>Description</th>
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<tr>
<td>4</td>
<td>Pariente et al. (2012)</td>
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<td>Kales et al. (2012)</td>
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<td>Huybrechts et al. (2012a)</td>
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<td>Sultzer et al. (2008)</td>
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<td>1</td>
<td>Ballard, Waite, &amp; Birks (2012)</td>
<td>Systematic Review</td>
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(Melnyk & Fineout-Overholt, 2011)
Level of Evidence: Other Psychotropics

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<td>Porsteinsson et al. (2003)</td>
<td>Open Label Extension of RCT</td>
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<td>Hermann et al. (2007)</td>
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<tr>
<td>1</td>
<td>Seitz et al. (2011)</td>
<td>Systematic Review</td>
</tr>
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</table>

(Melnyk & Fineout-Overholt, 2012)

EBP Protocol: Hierarchy of Psychotropics

Intervention Tool
Memantine: Significant efficacy in cognitive, functional, global, and psychiatric symptoms (Cummings et al., 2006; Tariot et al., 2004)

Sertraline: Greater efficacy than placebo for severe psychiatric symptoms (Finkel et al., 2004)

Citalopram: Similar efficacy to and greater tolerability than risperidone (Pollock et al., 2007)

Other SSRIs: Better efficacy than and similar tolerability as APMs (Seitz et al., 2011)

Trazadone: Similar efficacy and tolerability as placebo and APMs (Seitz et al., 2011)
Level III

- Valproic Acid: Improved BPRS agitation factor and CGI ratings and similar safety and tolerability to placebo (Tariot et al., 2005; Porsteinsson et al., 2001)

Level IV: APMs

- Quetiapine: The relative risk (RR) of death was reduced for quetiapine in comparison to risperidone (Kales et al. 2012) and quetiapine was not associated with cardiovascular symptoms (Maher et al., 2011)

- Aripiprazole: Associated with modest efficacy, but with significant adverse events (Ballard et al., 2012; Maher et al., 2011)

- Risperidone: Improved NPI and CGIC scores compared to placebo, but significant adverse events (Maher et al., 2011; Sultzer et al., 2008)

- Olanzapine: Associated with improved aggression and NPI scores, but with significant adverse events (Ballard et al., 2012; Maher et al., 2011; Sultzer et al., 2008)
AVOID HALOPERIDOL:
- 57% greater mortality risk than risperidone (Huybrechts et al., 2012; Kales et al., 2012)
- Mortality rate 109.1/100 person years (Huybrechts et al., 2012)

Level I
Memantine
(Cummings et al., 2006; Tariot et al., 2004)

Level II
Antidepressants

#1 Sertraline
(Sacks et al., 2001)

#2 Citalopram
(Sacks et al., 2001; Pelchat et al., 2007)

#3 Other SSRIs
(Sacks et al., 2001)

#4 Trazadone
(Sacks et al., 2001)

Level III
Valproic Acid and Derivatives
(Potkin et al., 2011; Potkin et al., 2011; Tariot et al., 2005; Tariot et al., 2001)

Level IV
Antipsychotics

#1 Quetiapine
(Ballard et al., 2012; Huybrechts et al., 2012; Kales et al., 2012; Maher et al., 2011)

#2 Aripiprazole
(Ballard et al., 2012; Kales et al., 2012; Maher et al., 2011)

#3 Risperidone
(Ballard et al., 2012; Maher et al., 2011; Sulsar et al., 2008)

#4 Olanzapine
(Ballard et al., 2012; Maher et al., 2011; Sulsar et al., 2008)
Implementation

Study Design, Setting, and Sample

Study Design

- This study used a single-group pretest/posttest design.
  - Prior to and after an in-service education, nurses completed a test to evaluate their understanding of the material.
  - 100% medical record review of long term care residents was completed pre- and post implementation to determine the frequency of APM use.
Statistical Analysis

- Data was collected and stored in an encrypted Excel document.
  - Diagnosis and psychotropic rates were calculated using Excel formulas
- SPSS Version 22 was used for statistical analysis
  - Descriptive statistics were analyzed
  - A paired \( t \) – test and Wilcoxon signed-ranks test were used for analysis

Setting

- SNF
- 188 beds total
- 137 LTC occupied beds pre-implementation
- 135 LTC occupied beds post-implementation
Sample

- Sample
  - Staff nurses (N = 27)
  - Key medical providers (N = 4)
  - 100% of LTC SNF residents (N = 137 pre and N = 135 post)

Population

- Inclusion Criteria
  - Long term care SNF residents
  - Long term care SNF nursing staff
    - LPNs & RNs
    - Full time, Part time, & Perdiem
  - Key medical providers (MDs and NPs)

- Exclusion Criteria
  - Short term rehab residents
  - Short term rehab nursing staff
Risks & Benefits

- **Risks**
  - Stress
  - Additional workload

- **Benefits**
  - Increased awareness of the risks of APM and alternatives to their use.
  - Reduced risk of CMS citations
  - Fewer adverse events

Data Collection

- Nursing staff demographics
- SNF resident demographics
- Nursing staff’s pretest and posttest scores
- Number of APM prescribed routinely and as needed to each resident prior to and after implementation
- Prescription of other psychotropic medications
Project Objectives

Short Term Objectives

- 90% of nursing staff will attend one of four scheduled one hour in-service education programs on risk of APMs, communication to providers, and use and documentation of EBP protocol by November 30, 2014.

  - Seven one hour in-service education programs were conducted between October 29, 2014 and January 7, 2015
  
  - 68% (27/40) of all nursing staff (full time, part time, & prn) attended
Short Term Objectives (cont.)

- 90% of key SNF providers (MDs, APRNs, PAs) will be informed of EBP protocol and CMS guidelines by November 30, 2014.
  - 80% (4/5) of key SNF providers were informed
  - These key providers oversee 90% of the residents

Long Term Objective

- APM use in the chosen facility will decrease by 5% by March 1, 2015

Figure 3. Comparison of APM rate in the nation, state, and facility per CMS, and pre-implementation (CMS, n.d.)
Project Results
Data Analysis for Nurses’ Education

Nursing Demographics

Table 1
Nursing Demographics

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</table>
Descriptive Analysis

Figure 4. Histograms of pretest and posttest scores with normal curve superimposed. Pretest scores have normal distribution ($m = 7.04 (1.81)$, $p < .001$, 95% CI [6.32, 7.75] $n = 27$). Posttest scores are skewed to the left ($m = 13.26 (1.76)$, $p < .001$, CI [12.59, 13.93], $mdn = 14.00$, $IQR = 3.00$, $n = 27$).

Descriptive Analysis

Figure 5. Normal Q-Q Plot of pretest (left) and posttest (right). The points of the normal plots fall roughly along the reference line, with the exception of the one outlier on the posttest plot.
Parametric Analysis

Paired-Samples t – Test
- A paired-samples t - test was conducted revealing that the mean score (standard deviation in parentheses) increased from 7.04 (1.81), $p < .001$, 95% CI [6.32, 7.75] on the pretest to 13.26 (1.70), $p < .001$ CI [12.59, 13.93] on the posttest.
- The difference between the two means is statistically significant at the .001 level ($t = -17.26$, $m = -6.22$ (1.89), CI [-6.96, -5.47], $df = 26$).
- The effect size as measured by $d$ was .1, indicating a very small treatment effect.

Non-Parametric Analysis

Wilcoxon Signed-Ranks Test
- A Wilcoxon signed-ranks test was also conducted and revealed a statistically significant change from pretest to posttest scores (pretest $mdn = 7.00$, posttest $mdn = 12.00$, $Z = -4.554$, $p = .001$)
Project Results
Pre-and Post-implementation APM Use

Long Term Objective

- APM use in the chosen facility actually increased from 21.2% to 22.2% by March 1, 2015

*Figure 6. Comparison of CMS, pre-implementation, and post-implementation APM rate (CMS, n.d.)*
Pre- and Post-implementation APM

Table 3
Facility total APM prescription rate and APM prescription rate for NPS associated with dementia.

<table>
<thead>
<tr>
<th>Facility APM Prescription Rate</th>
<th>Pre-implementation</th>
<th>Post-implementation</th>
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<tbody>
<tr>
<td>Total APM</td>
<td>21.2% (29/137)</td>
<td>22.2% (30/135)</td>
</tr>
<tr>
<td>Dementia APM</td>
<td>17.5% (24/137)</td>
<td>15.5% (21/135)</td>
</tr>
</tbody>
</table>

Overall and Dementia Pre- and Post-implementation APM

Figure 7. Comparison of CMS and study pre-implementation, and post-implementation APM rates (CMS, n.d.; 2015)
Overall Pre- and Post- Individual APM Use

![Bar chart showing comparison of individual APM and overall APM pre-implementation and post-implementation.](chart1)

*Figure 8. Comparison of individual APM and overall APM pre-implementation and post-implementation. The resident with Schizophrenia was on Thioridazine.*

Pre- vs. Post- Individual APM Use in Dementia

![Bar chart showing comparison of pre-implementation and post-implementation %APM use for dementia behaviors.](chart2)

*Figure 9. Comparison of pre-implementation and post-implementation %APM use for dementia behaviors*
Discussion

- 28 new residents were included in the post-implementation chart review
- Several new residents had a major mental illness other than Schizophrenia and few had dementia
  - 18% (5/28) new residents had Bipolar disorder
  - 29% (8/28) new residents had Dementia

Discussion (cont.)

- 67% (92/137) of residents had a diagnosis of dementia upon pre-implementation
- 61% (83/135) of residents had diagnosis of dementia upon post-implementation
Figure 10. Comparison of CMS, study pre-implementation, study post-implementation, and current APM rates (CMS, n.d.)
Figure 11. Comparison of APM Rate for the State, Nation, and Facilities Where Protocol is Used. (CMS, n.d.)

References


