Application of STOPP Criteria in Comparison to Beers Criteria in an Inpatient Psychiatric Facility and Impact on Utilization of Potentially Inappropriate Medications and Adverse Outcomes

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Outline

• Background/Rationale
• Description of Innovative Service
• Impact on Patient Care/Results
• Discussion
• Conclusions
Background/Rationale
Polypharmacy

Beers Criteria

- Developed in 1991
- Potentially inappropriate medications (PIMs) in older people (65 years and older)
- No association between Beers Criteria PIMs & incidence of ADEs

Screening Tool of Older Persons’ potentially inappropriate Prescriptions (ST OPP) Criteria

- Developed in 2008
- Cited advantages vs. Beers Criteria:
  - Significant association with avoidable ADEs vs. Beers Criteria
  - Organization according to physiological systems
  - Inclusion of medications currently in widespread use
  - Emphasis on potential drug interactions & duplicate drug class prescription
  - Inclusion of several criteria not included in Beers Criteria

Purpose

• To compare STOPP Criteria to Beers Criteria in a geriatric population in an inpatient psychiatric facility when used to:
  – Identify PIMs
  – Make recommendations to decrease use of PIMs
  – Determine impact on adverse clinical outcomes

• To ultimately implement a process for assessing medication regimens for all geriatric patients
Description of the Innovative Service
PGY2 Geriatrics Rotation

• Routine responsibilities:
  – Identifying potential drug therapy problems
  – Making recommendations to the geriatric psychiatry team

• Using Beers & STOPP Criteria:
  – Identified PIMs
  – Made recommendations as clinically appropriate
Retrospective Chart Review

• Evaluated whether Beers vs. STOPP led to a significant decrease in number of PIMs & associated adverse outcomes

• Data extracted from patients’ electronic medical records

• Primary outcome:
  – Change in number of PIMs from baseline to follow-up for Beers vs. STOPP Criteria
    • Baseline: rotation start date or date of admission
    • Follow-up: rotation end date or date of discharge
Retrospective Chart Review

• Secondary outcomes:
  – Change from baseline to follow-up for Beers vs. STOPP Criteria in adverse outcomes:
    • Number of falls
    • Number of required referral to the medical clinic or transfer to an acute medical facility
    • Medication-specific ADEs
  – Timeline:
    • Baseline: 8 weeks prior to recommendation (or beginning with date of admission)
    • Follow-up: 8 weeks after recommendation (or up to date of discharge)
    • Equal amount of time prior to & after each recommendation
Retrospective Chart Review

- **Inclusion Criteria:**
  - Age \( \geq 60 \) or \( \leq 89 \) years
  - Inpatient on the geriatric unit during the time period of the geriatrics rotation

- **Exclusion Criteria:**
  - No medications from either set of criteria identified on the patient’s medication profile
Impact on Patient Care/Results
Baseline

- 29 patients met inclusion criteria
  - Mean age: 67.6 years
  - Gender: 72.4% female
  - Ethnicity: 69.0% Caucasian
  - Median length of stay: 270 days (range 2 days to 25.7 years)

- Number of PIMs:
  - STOPP: n=112 (mean per patient ±SD 3.9±2.3)
  - Beers: n=63 (mean per patient ±SD 2.2±1.3)
  - Significantly more PIMs identified per patient using STOPP Criteria (p<0.001)
Recommendations

• Total of 76 recommendations on 23 patients
  – STOPP: 72 recommendations
  – Beers: 48 recommendations
• 84% accepted
Primary Outcome: Number of PIMs

- No significant difference in the change in number of PIMs per patient from baseline to follow-up for STOPP vs. Beers (p=0.3750)
- STOPP: PIMs decreased 41% from baseline (n=112) to follow-up (n=66)
  - Mean change per patient -1.6 ± 1.5 (p<0.0001)
- Beers: PIMs decreased 63% from baseline (n=63) to follow-up (n=23)
  - Mean change per patient -1.4 ± 1.1 (p<0.0001)
Secondary Outcomes: Falls

- Total number of falls decreased 37.5% (from 8 to 5) for both STOPP & Beers
- Mean number of falls per patient did not decrease significantly for STOPP ($p=0.54$) or Beers ($p=1.00$)
Secondary Outcomes: Transfers/Referrals

- Total number of referrals/transfers decreased 27.2% (from 44 to 32) for STOPP vs. 23.1% (from 39 to 30) for Beers.
- Mean number of transfers/referrals per patient did not decrease significantly for STOPP or Beers (p=1.00 for both).
Secondary Outcomes: ADEs

- Total number of ADEs decreased 27.8% (from 36 to 26) for STOPP vs. 20.0% (from 25 to 20) for Beers
- Mean number of ADEs per patient decreased significantly for STOPP \( (p=0.013) \) & Beers \( (p<0.001) \)
Discussion & Conclusions
Discussion

• Utilization of STOPP & Beers Criteria led to a significant decrease in number of PIMs in a geriatric population at an inpatient psychiatric facility
  – No significant difference between criteria
  – Nearly double the number of PIMs were identified using STOPP Criteria

• All adverse outcomes decreased post-recommendation using both criteria
  – Statistically significant for ADEs

• Has led to a change in admission order set through removal of PRN chlorpheniramine
Limitations

- Small patient population
- Short intervention duration
- Clinical judgment regarding appropriateness of medications
- Variability in reasoning for adverse outcomes
- Assessed outcomes for a set time period without consideration for when medication initiated/discontinued
- Missed medications for the primary outcome
Conclusions

• Utilization of both STOPP & Beers Criteria decreased PIMs in a geriatric population at an inpatient psychiatric facility

• Both criteria decreased adverse outcomes including falls, required transfer to an acute medical facility or referral to the medical clinic, and adverse drug events

• Implementation of a process for assessing medication regimens of geriatric patients would likely be beneficial
Questions?
Transfers to an Acute Medical Facility

• 5 pre-recommendation:
  – Chest pain (n=2)
  – Rule out myocardial infarction (n=1)
  – Abnormal EKG (n=1)
  – Congestive heart failure (n=1)

• 3 post-recommendation:
  – Dehydration/somnolence/UTI (n=1)
  – Abnormal EKG (n=1)
  – Pneumonia (n=1)
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