A PhArmacist/RN supervised medication TitratioN program to achiEve heart Rate/ rhythm control in Atrial Fibrillation: a retrospective chart review (PARTNER-AF)

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Introduction

Atrial fibrillation (AF) is a chronic condition that varies in its presentation of symptoms from asymptomatic to debilitating

Incidence
- Increases exponentially with age, from 0.1% in those less than 55 years old to approximately 10% in patients over 80 years of age

Atrial Fibrillation Clinic (AFC)
- Started in January 2010 to service all of Island Health
- Goal: Timely access to care and reduce emergency room and electrophysiologist (EP) visits
- Interdisciplinary approach to AF support and treatment (pharmacist/RN)
- Services: Intake assessments, education classes, treatment support, and medication management through the Medication Titration Program (MTP)

Medication Titration Program (MTP)
- Started in June 2011 as part of the AFC
- Pharmacist/RN titrate AF medications based on standardized, pre-approved medication titration algorithms, and monitor patients
- Lack of published evidence for a standardized MTP in a pharmacist/RN run AFC

Electrophysiologist *Assess and Prescribe* ⟷ AFC pharmacist/RN *Titrate and Monitor*

Study Objectives

Objective 1: Characterize the patient population that was provided standard of care by EP as compared with the patients who were followed by the MTP

Objective 2: Assess the outcomes of patients in the MTP compared with a group of case matched patients receiving standard EP care

Outcomes Measures
1. Proportion of patients who succeeded or failed
   a) Succeeded: Stable on prescribed medication for 1 year or discharged by EP, whichever comes first
   b) Failed: Discontinuation of or addition to prescribed medication, or subsequent procedural intervention
2. Time to end point from initial assessment: a) Succeeded, b) Failed
3. # emergency room visits/hospitalizations at 6 months and 12 months
4. # AFC or EP encounters (phone/in person)
5. Time to first follow up by MTP or EP

Method: Retrospective Chart Review

Inclusion
- *Standard EP care group:* Initial EP assessment January 2010 to May 2011
- *MTP group:* Referred by EP between June 2011 to February 2013
- *Case matched variables:* Rate or rhythm strategy, AF classification, CCS-SAF score, age, gender, and region in Island Health

Exclusion
- Residing outside Island Health
- Planned procedure at initial assessment
  - cardioversion, pulmonary vein ablation, or AV node ablation with pacemaker
- Not prescribed a medication at initial EP assessment

Statistical Method
- Descriptive analysis for characterization of patients
- Continuous data expressed as a proportion and a mean with 95% confidence intervals

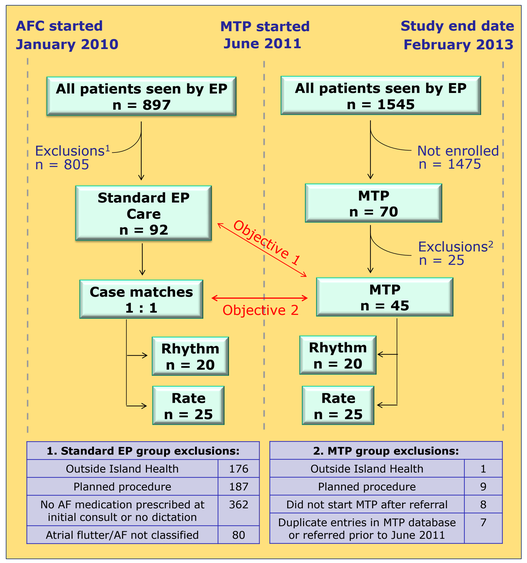


Figure 1: Patient flow chart

Results

Table 1: Characterization of patient populations

	Standard EP Care Rhythm (n = 54)[A]	MTP Rhythm (n = 20)	Case match Rhythm (n = 20)	Standard EP care Rate (n = 38 + 3)[A,B]	MTP Rate (n = 25)	Case Match Rate (n = 25)[B]
Average Age (95% CI)	67.6 (64.7-70.5)	65.2 (61.1-69.3)	68.4 (64.1-72.8)	70.9 (67.1-74.7)	70.3 (66.9-73.6)	73.0 (68.6-77.4)
Male (%)	28 (52)	6 (30)	7 (35)	21 (51)	15 (60)	12 (48)
Paroxysmal (%)	48 (89)	17 (85)	16 (80)	16 (39)	2 (8)	2 (8)
Persistent (%)	6 (11)	3 (15)	4 (20)	19 (46)	19 (76)	19 (76)
Permanent (%)	0 (0)	0 (0)	0 (0)	6 (14)	4 (16)	4 (16)
Average CCS-SAF score (95%CI)	2.31 (2.08-2.55)	2.75 (2.54-2.96)	2.60 (2.36-2.84)	1.59 (1.26-1.91)	1.88 (1.50-2.26)	1.60 (1.19-2.01)
South of Duncan (%)	29 (54)	13 (65)	12 (60)	35 (85)	18 (72)	19 (76)
CHADS2 ≥ 1 (%)	30 (56)	14 (70)	13 (65)	28 (68)	19 (76)	19 (76)
Anticoagulated (%)	30 (56)	12 (60)	11 (55)	25 (61)	17 (68)	16 (64)

[A] Standard EP care group (n = 92): Standard EP care Rhythm (n = 54) + Standard EP care Rate (n = 38)
[B] Includes three patients from post-MTP population (see Limitations section)

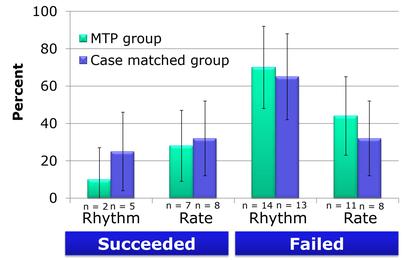


Figure 2: Proportion of patients who succeeded and failed

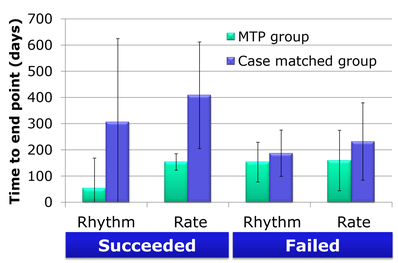


Figure 3: Mean time to end point- succeeded or failed

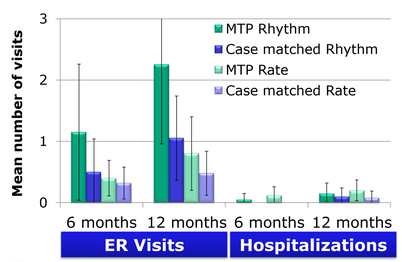


Figure 4: Mean number of ER visits and hospitalizations

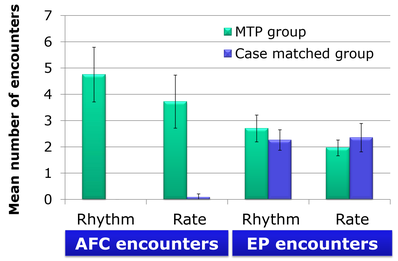


Figure 5: Mean number of AFC and EP encounters

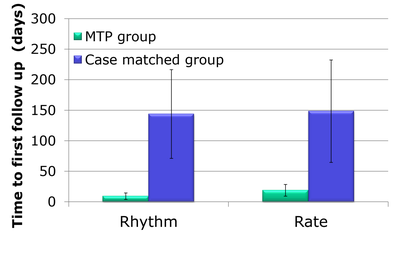


Figure 6: Mean time to first follow up by MTP or EP after initial EP assessment

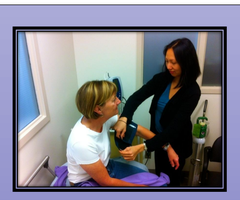
Limitations

- Retrospective study → missing data (charts missing research data fields), subjective interpretation of chart notes
- Small sample size → difficulty case matching (i.e. had to recruit 3 patients assessed after May 2011 that met case matched variables), outliers greatly affect results, limited statistical analysis, hypothesis generating only
- Time to end point
  - MTP group: Based on final assessment and discharge by EP; may not reflect actual time to succeeded/failed based on pharmacist/RN assessment
- Data was not collected on GP visits; MTP may have possible impact

Discussion

Objective 1:
- Wide variety of patients referred to the pharmacist/RN run MTP
- Possible indication that patients referred to the MTP have more severe symptoms based on CCS-SAF score

Objective 2:
1. No difference in proportion of patients who succeeded/failed suggesting that the MTP is equivalent to EP for achieving drug outcomes
   - Last day of data collection was February 28, 2014. MTP patients who had not yet succeeded or failed by this date were not analyzed
2. Time to end point
   a) MTP rate patients who succeeded had faster time to EP discharge (SS), suggesting that medications were titrated to effect more rapidly
      - Possible indication that MTP rhythm patients who succeeded had faster time to EP discharge but this was not statistically significant
   b) No difference in time to identifying patients failing with medications possibly due to (in both groups):
      - Early recall of patients for abnormal drug monitoring test results
      - Patients proactively requesting appointments to change medications based on inefficacy or intolerance
3. No difference in number of emergency room visits or hospitalizations
   - Numerically more emergency room visits per patient in MTP group, but driven by 3 patients (short time in the MTP but many subsequent visits)
4. Number of AFC and EP encounters
   - MTP patients received comprehensive monitoring allowing for faster titration of medications, possibly explaining faster time to EP discharge
   - MTP did not reduce the mean number of EP visits: as per the medication titration algorithms, patients are expected to see the EP at least twice (i.e. initial assessment and discharge from EP care)
5. MTP reduced the time to first follow up (SS), thereby providing timely access to care and monitoring



Conclusion

MTP vs. Standard EP care
- MTP group: Higher proportion of females (rhythm group); higher proportion of males and persistent AF (rate group); higher symptom severity scores
- Statistically significant
  - MTP rate control group had faster time to EP discharge
  - MTP group had more follow up encounters with AFC
  - MTP group had faster time to first follow up after initial EP assessment
- Not statistically significant
  - Proportion of patients who succeeded/failed
  - Time to:
    - Discharging rhythm control patients who had succeeded
    - Identifying patients failing on medications
  - Number of emergency room visits, hospitalizations, or EP encounters

Adds to literature suggesting a pharmacist and RN can participate in AF medication management and monitoring of patients through an outpatient clinic using standardized, pre-approved algorithms

Implications to Practice

The MTP has been in operation for 3 years and with every year, the number of patients monitored under this program increases
- AF is a complicated, often debilitating condition
- The MTP provides close monitoring and additional support for patients and should be considered for all patients
- Future research: Larger, randomized, prospective trial to confirm results and determine time to success or failure in relation to patient quality of life, cost effectiveness, and overall care utilization

References available on request