MEMORANDUM FOR SGSP

ATTN: MAJ SHAOPING MO SUMNER

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your paper, entitled **Assessing Medication Adherence in Patients with Rheumatoid Arthritis (RA)** presented at/published to **Texas Society of Health-Systems Pharmacists Alcalde Southwest Leadership Conference, Galveston TX, 26-17 April 2017** in accordance with MDWI 41-108, has been approved and assigned local file #17209.

2. Pertinent biographic information (name of author(s) title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.

3. Please know that if you are a Graduate Health Sciences Education student and your department has told you they cannot fund your publication, the 59th Clinical Research Division may pay for your basic journal publishing charges (to include costs for tables and black and white photos). We cannot pay for reprints. If you are a 59 MDW staff member, we can forward your request for funds to the designated Wing POC at the Chief Scientist’s Office, Ms. Alice Houy, office phone: 210-292-8029; email address: alice.houy.civ@mail.mil.

4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

LINDA STEEL-GOODWIN, Col, USAF, BSC
Director, Clinical Investigations & Research Support

*Warrior Medics – Mission Ready – Patient Focused*
1. TO: CLINICAL RESEARCH
Shaoing Mo Summer, Major/O-4, SGSP

2. FROM: (Author's Name, Rank, Grade, Office Symbol)
Shaoing Mo Summer, Major/O-4, SGSP

3. GME/GHS STUDENT: ☒ YES ☐ NO

4. PROTOCOL NUMBER:
C.207.024e

5. PROTOCOL TITLE: (NOTE: For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.)
Assessing Medication Adherence in Patients with Rheumatoid Arthritis (RA)

6. TITLE OF MATERIAL TO BE PUBLISHED OR PRESENTED:
Assessing Medication Adherence in Patients with Rheumatoid Arthritis (RA)

7. FUNDING RECEIVED FOR THIS STUDY? ☐ YES ☒ NO
FUNDING SOURCE:

8. DO YOU NEED FUNDING SUPPORT FOR PUBLICATION PURPOSES? ☒ YES ☐ NO

9. IS THIS MATERIAL CLASSIFIED? ☐ YES ☒ NO

10. IS THIS MATERIAL SUBJECT TO ANY LEGAL RESTRICTIONS FOR PUBLICATION OR PRESENTATION THROUGH A COLLABORATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA), MATERIAL TRANSFER AGREEMENT (MTA), INTELLECTUAL PROPERTY RIGHTS AGREEMENT ETC.? ☐ YES ☒ NO
NOTE: If the answer is YES then attach a copy of the Agreement to the Publications/Presentations Request Form.

11. MATERIAL IS FOR: ☒ DOMESTIC RELEASE ☐ FOREIGN RELEASE
CHECK APPROPRIATE BOX OR BOXES FOR APPROVAL WITH THIS REQUEST. ATTACH COPY OF MATERIAL TO BE PUBLISHED/PRESENTED.

11a. PUBLICATION/JOURNAL (List intended publication/journal.)

11b. PUBLISHED ABSTRACT (List intended journal.)

11c. POSTER (To be demonstrated at meeting: name of meeting, city, state, and date of meeting.)

11d. PLATFORM PRESENTATION (At civilian institutions: name of meeting, city, state, and date of meeting.)
Texas Society of Health-Systems Pharmacists Alcalde Southwest Leadership Conference

11e. OTHER (Describe: name of meeting, city, state, and date of meeting.)
Galveston, TX

12. HAVE YOUR ATTACHED RESEARCH/TECHNICAL MATERIALS BEEN PREVIOUSLY APPROVED TO BE PUBLISHED/PRESENTED?
□ YES ☒ NO
ASSIGNED FILE # __________________________ DATE 20 Jan 2017

13. EXPECTED DATE WHEN YOU WILL NEED THE CRD TO SUBMIT YOUR CLEARED PRESENTATION/PUBLICATION TO DTIC
NOTE: All publications/presentations are required to be placed in the Defense Technical Information Center (DTIC).

14. 59 MDW PRIMARY POINT OF CONTACT (Last Name, First Name, M.I., email)
Summer, Shaoping, M, shaoping.m.summer.mil@email.mil

15. DUTY PHONE/PAGER NUMBER
916-3455/210-228-6002

16. AUTHORSHIP AND CO-AUTHOR(S) List in the order they will appear in the manuscript.

<table>
<thead>
<tr>
<th>LAST NAME, FIRST NAME AND M.I.</th>
<th>GRADE/RANK</th>
<th>SQUADRON/GROUP/OFFICE SYMBOL</th>
<th>INSTITUTION (if not 59 MDW)</th>
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<tbody>
<tr>
<td>Shaoping Mo Summer</td>
<td>O-4/Major</td>
<td>959 CSPS</td>
<td>USARMY MEDCOM</td>
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<tr>
<td>Annabel L Schumaker</td>
<td>GS 13</td>
<td>BAC Army</td>
<td>Pfizer</td>
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<tr>
<td>Thomas Shank</td>
<td>O5 (retired)</td>
<td>N/A</td>
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17. IS A 502 ISRG/IAEC ETHICS REVIEW REQUIRED (JER DOD 5500.07-R)? ☐ YES ☒ NO
I CERTIFY ANY HUMAN OR ANIMAL RESEARCH RELATED STUDIES WERE APPROVED AND PERFORMED IN STRICT ACCORDANCE WITH 32 CFR 219, AFMAN 40-401-I, AND 59 MDW 41-108. I HAVE READ THE FINAL VERSION OF THE ATTACHED MATERIAL AND CERTIFY THAT IT IS AN ACCURATE MANUSCRIPT FOR PUBLICATION AND/OR PRESENTATION.

18. AUTHOR'S PRINTED NAME, RANK, GRADE
Shaoing Mo Summer, Major/O-4

19. AUTHOR'S SIGNATURE

20. DATE
3/21/2017

21. APPROVING AUTHORITY'S PRINTED NAME, RANK, TITLE
John Andrew Bouchard, Captain/O-3, Inpatient Pharmacy Flt/CC

22. APPROVING AUTHORITY'S SIGNATURE

23. DATE
3/22/2017
Presentation of IRB approved research with appropriate disclaimers. Approved.
Assessing Medication Adherence in Patients with Rheumatoid Arthritis (RA)

Shaoping Mo Sumner, Maj, USAF, PharmD
San Antonio Combined Military Postgraduate Year One Pharmacy Residency Program
Fort Sam Houston, TX

Disclaimer
This research has been approved by the Brooke Army Medical Center Institutional Review Board.

The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Air Force, the Department of the Army or the Department of Defense or the U.S. Government.

Neither my spouse or I have any financial interest/arrangement, affiliation or relationship with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this program.

Learning Objectives
At the completion of this program, the participant will be able to

- Identify oral RA-specific drug treatment options
- Differentiate the two medication adherence instruments
- Analyze the correlation between the two instruments
Background

- Rheumatoid arthritis
  - Affecting 1-3 million Americans
  - Seventy percent are women
  - Associated with higher risk of heart disease and stroke

Drug Therapies

<table>
<thead>
<tr>
<th>Class</th>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral DMARDs</td>
<td>Methotrexate</td>
</tr>
<tr>
<td></td>
<td>Hydroxychloroquine</td>
</tr>
<tr>
<td></td>
<td>Leffunomide</td>
</tr>
<tr>
<td></td>
<td>Sulfasalazine</td>
</tr>
<tr>
<td></td>
<td>Minocycline</td>
</tr>
<tr>
<td>IV Biologics</td>
<td>Etanercept</td>
</tr>
<tr>
<td></td>
<td>Adalimumab</td>
</tr>
<tr>
<td>Steroid/NSAID</td>
<td>Prednisone</td>
</tr>
<tr>
<td></td>
<td>Ibuprofen</td>
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</table>

Background

- Patient adherence to DMARDs may be adversely affected by
  - Slow onset to symptom relief
  - Intolerable side effects
- Medication adherence and compliance are used interchangeably
  - Adherence is a preferred term
  - Actively participating

Background

- Non-adherence rate to DMARDs up to 80%
- Higher healthcare cost, decreased quality of life
- Two instruments assessing medication adherence
  - Compliance-Questionnaire-Rheumatology (CQR)
    - Original 19-item version (CQR19)
    - New 5-item version (CQR5)
  - Morisky Medication Adherence Scale (MMAS8)
**Comparisons**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Design</th>
<th>Validated</th>
<th>Time to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>CQR19</td>
<td>RA specific</td>
<td>Yes</td>
<td>&lt;12 min</td>
</tr>
<tr>
<td>CQR5</td>
<td>RA specific</td>
<td>No</td>
<td>&lt;2 min</td>
</tr>
<tr>
<td>MMAS8</td>
<td>Many disease states but not RA</td>
<td>Yes</td>
<td>&lt;1 min</td>
</tr>
</tbody>
</table>

**CQR Sample Questions**

Don't agree at all; Don't agree; Agree; Agree very much (1-4 points, respectively)

1. If the rheumatologist tells me to take the medication, I do so
2. I take my anti-rheumatic medicines because I have fewer problems
3. If I don't take my anti-rheumatic medicines, I have more complaints
4. I definitely don't care to miss my anti-rheumatic medications
5. If I can help myself with alternative therapies, I prefer that to what my rheumatologist prescribes
6. I don't expect miracles from my anti-rheumatic medicines

**MMAS8 Sample Questions**

1 for No; 0 for Yes, except the last question (never/rarely, once in a while, sometimes, usually, always, 1, 0.75, 0.5, 0.25, 0)

- Do you sometimes forget to take your medicine?
- Did you take all your medicines yesterday?
- When you feel like your symptoms are under control, do you sometimes stop taking your medication?
- When you travel or leave home, do you sometimes forget to bring along your medicine?
- How often do you have difficulty remembering to take all your medicine?

**Purpose and Objectives**

**Purpose:** Assess medication adherence in patients with rheumatoid arthritis

**Objectives:**

1. **Primary:** Assess whether there is a correlation between CQR19 and MMAS8
2. **Secondary:** Determine if there is potential medication adherence issue in patients with RA taking oral DMARDs, and the correlation between CQR5/19 and MMAS8
Research Design & Methods

• Prospective cohort study

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Diagnosed with RA</td>
<td>• Patients not meeting the inclusion criteria</td>
</tr>
<tr>
<td>• Taking oral DMARDs.</td>
<td>• Cognitive disability</td>
</tr>
<tr>
<td>• Treated in Rheumatology Clinic</td>
<td></td>
</tr>
<tr>
<td>• Age ≥ 18 years</td>
<td></td>
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</tbody>
</table>

Methods

• An 80% power was used to detect a correlation coefficient of 0.2 to get estimated sample size of 102

• Data collection and processing
  - A combined questionnaire from CQR19 and MMAS8 was provided to patients upon check-in
  - Completed surveys were collected in designated drop boxes
  - Primary investigator collected them at the end of each day
  - Continued for 6 weeks

Statistical Analysis

• Spearman rank-order correlation
  - Variables are ordinal or continuous
  - Linear (monotonic) relationship
  - The null hypothesis is that the correlation between two instruments is zero

• Chi-square (or Fisher's exact) test used to show if the group assignments are associated

Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Age (n=60), Females, 62 (77%)</td>
<td>54 (13.6)</td>
</tr>
<tr>
<td>Males, 18 (23%)</td>
<td>51 (14.7)</td>
</tr>
<tr>
<td>Duration of RA, years (n=75)</td>
<td>12 (11.2)</td>
</tr>
<tr>
<td>Number of all medications (n=75)</td>
<td>8 (6)</td>
</tr>
<tr>
<td>Number of oral RA medications (n=81)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Self-described Health (n=40)</td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>4 (1.5)</td>
</tr>
<tr>
<td>Poor</td>
<td>42 (52.5)</td>
</tr>
<tr>
<td>Very Poor</td>
<td>27 (33.7)</td>
</tr>
<tr>
<td>Very Well</td>
<td>7 (8.8)</td>
</tr>
</tbody>
</table>

SD: standard deviation, IQR: interquartile range
**Results**

**Spearman Correlations for Adherence/Compliance Predictor Scores**

<table>
<thead>
<tr>
<th>Comparison Groups</th>
<th>P (rho)</th>
<th>p-value</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMAS8-CQR19 taking compliance</td>
<td>0.288</td>
<td>0.015</td>
<td>Weak-Significant</td>
</tr>
<tr>
<td>MMAS8-CQR19 dosing compliance</td>
<td>0.235</td>
<td>&lt;0.001</td>
<td>Strong-Significant</td>
</tr>
<tr>
<td>CQR19 taking/dosing compliance</td>
<td>0.842</td>
<td>&lt;0.001</td>
<td>Strong-Significant</td>
</tr>
</tbody>
</table>

- MMAS8 and CQR19 taking and dosing scores were significantly correlated
- CQR19 taking and dosing scores were significantly correlated

**Comparison Groups**

<table>
<thead>
<tr>
<th>Predictor and Groups</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMAS8 Adherence</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>7 (8.5)</td>
</tr>
<tr>
<td>Medium</td>
<td>32 (39.0)</td>
</tr>
<tr>
<td>Low</td>
<td>43 (52.4)</td>
</tr>
<tr>
<td>CQR19 Taking Compliance</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>41 (50)</td>
</tr>
<tr>
<td>Low</td>
<td>41 (50)</td>
</tr>
<tr>
<td>CQR19 Dosing Compliance</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>26 (31.7)</td>
</tr>
<tr>
<td>Low</td>
<td>56 (68.3)</td>
</tr>
<tr>
<td>CQRS Adherence</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>29 (35.4)</td>
</tr>
<tr>
<td>Low</td>
<td>53 (64.6)</td>
</tr>
</tbody>
</table>

**Conclusion**

- Although CQR19 and MMAS8 scores were only weakly correlated, adherence groups assignments were similar
- The ability of CQRS and MMAS8 to predict adherence groups assignments were not similar
- The ability of CQR19 and CQRS to predict adherence groups assignments were similar
- Further study needed to recommend MMAS8 as a replacement for CQR19

All four predictor estimates identified high levels of potential DMARD non-adherence with predictions ranging from 50% to 68%
Limitations and Future Directions

- Limitations
  - Limited population to one site
  - Might be subject to recall bias
  - Patients filled out the form incorrectly/incompletely

- Future Directions
  - Include more than one treatment facility
  - Provide data indicating the potential extent of non-adherence
  - May serve as a baseline for further research

Assessment Questions

1. Oral Rheumatoid Arthritis-specific drug treatments include which of the following
   A) IV biologic agents
   B) Disease modifying anti-rheumatic drugs (DMARDs)
   C) Glucocorticoids
   D) B and C only

2. The Morisky Medication Adherence Scale was developed to assess medication adherence intent and has been validated in several common diseases, including RA.
   A) True
   B) False

3. The terms compliance and adherence are used interchangeably, but adherence is the preferred term since it implies active participation of the patient.
   A) True
   B) False
Acknowledgements

• This project would not be possible without the guidance, support, and assistance of the following people
  - Dr. Annabel Schumaker, PharmD, BCPS
  - Dr. Tom Shank, PharmD
  - Dr. Irene Lo, PharmD, BCPS
  - Dr. Scott Holuby, PharmD, BCPS
  - Staff at the Rheumatology Clinic
  - Everyone else who has supported me through my residency

References


Contact Information

For additional information contact me at: shaoping.m.sumner.mil@mail.mil

References

What is the Alcaldé Southwest Leadership Conference?
Alcaldé 2017, the 31st Annual Southwest Leadership Conference, intends to provide encouragement and learning experiences which will promote creativity, scholarship and leadership, and will promote the presentation of evidence-based research. To the extent possible, the process adopted for presentation at Alcaldé is patterned after that of ASHP, so as to provide a practical experience in getting ready for a national presentation.

Alcaldé, the Spanish title for the mayor of the town or village, is derived from the Arabic word al-qadi, or “judge.” Fortunately the term was applied to local government officials whose functions were varied but always included a judicial element. Types of alcalde were differentiated according to the specialized nature of their judicial functions: the alcaldes de corte was a judge in the palace court with jurisdiction in and about the residence of the king; the alcaldes mayor assisted the judges appointed by the king in the towns. Since the 19th Century, the alcaldes has had the dual role of the local council and representative of the central government. The pharmacy resident, fellow or preceptor must also serve a dual role as a leader among his or her peers and as a representative of the profession.

Important Deadlines:

<table>
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<th>Requirement</th>
<th>Deadline</th>
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<tr>
<td>Notification of Intent to Present</td>
<td>January 15, 2017</td>
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<tr>
<td>Abstract Submission</td>
<td>February 28, 2017</td>
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<td>PowerPoint Presentation</td>
<td>April 14, 2017</td>
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<td>Alcaldé Presentations</td>
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View the Guidelines for Submitting Platform Presentations
View a Sample Bio
View the Criteria for Self Assessment Questions
View the Criteria for Learning Objectives

PLATFORM PRESENTATIONS

All residents and fellows are strongly encouraged to submit abstracts of papers to be presented at SWLC for pharmacy residents, fellows and preceptors.

The presentation format includes 15 minutes of lecture and five minutes of questions-and-answers. The presentation must be in a PowerPoint format; an LCD Projector and screen will be provided. Abstracts should be submitted no later than February 28, 2017 via e-mail. Residents and fellows must submit their presentation in PowerPoint format no later than Friday, April 10, 2017. Changes to presentations will not be allowed after this time. Please submit the PowerPoint presentation with a title using your name; e.g.