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Los Angeles

A Quality Improvement Project to Enhance Precepting in a Primary Care

Nurse Practitioner Residency Program

A dissertation submitted in partial satisfaction of the

requirements for the degree

Doctor of Nursing Practice

by

Kristin Aamodt Kopelson

2022

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## ABSTRACT OF THE DISSERTATION

A Quality Improvement Project to Enhance Precepting in a Primary Care  
Nurse Practitioner Residency Program

by

Kristin Aamodt Kopelson

Doctor of Nursing Practice

University of California, Los Angeles, 2022

Professor Nancy Pike, Chair

**Background:** The One-Minute Preceptor (OMP) model to teach diagnostic reasoning and Reporter, Interpreter, Manager, Educator (RIME) framework to measure progress are used successfully in physician training programs. Currently, little is known about use of these tools in nurse practitioner (NP) training. **Objectives:** To answer the following: In NP trainees, does a standardized case presentation using the OMP, compared with the current approach, improve diagnostic reasoning skills as measured by the RIME framework competency evaluation in six weeks? **Methods:** Quality improvement project using Plan, Do, Study Act (PDSA) cycles performed at the Veteran's Affairs NP Residency in Los Angeles. Eleven preceptors and 4 NP trainees participated in a 12-week intervention using OMP techniques to support trainee

diagnostic reasoning scored weekly using the RIME framework. Preceptor knowledge of the OMP and RIME framework assessed pre-intervention was supplemented with a 1-hour workshop to address knowledge gaps. Preceptors performed return demonstrations of OMP techniques, RIME scoring, then educated trainees on the OMP and RIME [PDSA Cycle 1; weeks 1-6]. PDSA Cycle 2 was one-to-one meetings between trainees and program director with preceptor feedback for individualized plans for improvement [weeks 7-12]. RIME scores, preceptor self-efficacy, and use of teaching skills were measured pre-and post-intervention and a survey completed by preceptors and trainees at the end of the study. Demographic characteristics and survey responses were assessed with descriptive statistics and paired sample *t*-test for mean scores pre- and post-intervention. **Results:** Mean RIME scores improved (1.62 [0.17] vs. 2.23 [0.38],  $p < .001$ ) post 12-week intervention [PDSA Cycle 1 and 2]. After PDSA Cycle 1, individual scores revealed an outlier not at goal. PDSA Cycle 2 started weeks 7-12. Mean RIME scores improved between PDSA Cycle 1 and 2 (2.07 [0.25] vs. 2.48 [0.39],  $p < .001$ ), respectively. Preceptor self-efficacy and use of the teaching skills scores improved but not significantly. Program evaluation surveys showed majority of preceptors (91%) and trainees (100%) found the OMP model and RIME framework helpful. **Conclusion:** Use of the OMP improved precepting standardization and diagnostic reasoning in NP trainees. RIME scoring facilitated improvement discussions. A multi-site evaluation in a larger cohort is needed to validate findings.

The dissertation of Kristin Aamodt Kopelson is approved.

Mary Cadogan

Suzette Cardin

Robert Lucero

Nancy Pike, Committee Chair

University of California, Los Angeles

2022

## DEDICATION

This dissertation is dedicated to nurse practitioners who are learning, teaching, and growing the profession, but especially to the those serving vulnerable populations.

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Last but not least, I must thank Glenn, Grant, Mia, and Kirby Kopelson. Your love and logistical support were the foundation for completing this accomplishment during the pandemic.

## VITA

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### PRESENTATIONS (Accepted)

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2020	Warde, C., Shaner, A., & <b>Kopelson, K.</b> (August 2020). <i>Teamwork NEXUS</i> . Webinar.
2019	Warde, C., Shaner, A., <b>Kopelson, K.</b> , Cowan, B., Soh, M. (April 2019). <i>Building an Interprofessional Culture: Teamwork, Compassion, and Resilience in the Care of Vulnerable Populations</i> . (Workshop) Society of General Internal Medicine Annual Meeting, Washington DC.
2019	Shaner, A., Soh, M., <b>Kopelson, K.</b> , Gelberg, L., Warde, C. (January 2019). <i>The Humanism Pocket Tool: Finding the Joy in Treating Challenging Patients</i> . Webinar for National Healthcare for the Homeless Council.

## PUBLICATIONS

### A. RESEARCH PAPERS - Peer Reviewed

Owens, T., Ewing, D., Devera, M., Shrestha, S., **Kopelson, K.**, Capone-Newton, P., Gelberg, L. (2022). Response to the COVID-19 Pandemic: Housing for Health in the VA Greater Los Angeles Tent Community. *Annals of Family Medicine*. 20(3), . [Response To The Pandemic: Housing For Health In The Va Tent Community \(umich.edu\)](#)

Temblique, E., Foster, K., Fujimoto, J., **Kopelson, K.**, Borthwick, K. M., & Capone-Newton, P. (2022). A 1-Year Review of a Nationally Led Intervention to Improve Suicide Prevention Screening at a Large Homeless Veterans Clinic. *Federal Practitioner: For the Health Care Professionals of the VA, DoD, and PHS*, 39(1), 12–18. <https://doi.org/10.12788/fp.0215>

Bakr, O., Gelberg, L., Seragaki, S., Youn, S., Kawamoto, J., Hoppe, M., Altman, L., **Kopelson, K.**, May, F. P., Cowan, B., & Bhattacharya, D. (2019). Treating Hepatitis C in Homeless Veterans at the Greater Los Angeles Veterans' Affairs Medical Center. *Hepatology*, 70(3), 1071–1073. <https://doi.org/10.1002/hep.30643>

Soh, M., Shaner, A., Gelberg, L., **Kopelson, K.**, Stuber, M., Fessler, D., & Warde, C. (2018). Using the Humanism Pocket Tool for Patients with Challenging Behaviors. *Annals of family medicine*, 16(5), 467. <https://doi.org/10.1370/afm.2300>

Takano, Y., Yeatman, L. A., Higgins, J. R., Currier, J. W., Ascencio, E., **Kopelson, K. A.**, & Tobis, J. M. (2001). Optimizing Stent Expansion with New Stent Delivery Systems. *Journal of the American College of Cardiology*, 38(6), 1622–1627. [https://doi.org/10.1016/s0735-1097\(01\)01618-7](https://doi.org/10.1016/s0735-1097(01)01618-7)

### B. RESEARCH PAPERS - Peer Reviewed (ACCEPTED)

Prince, A., Sabio, Y., Efron, L., Abromowitz, M., Reyes, L., Darnell, J., Chen, P., Ng, D., Willinger, C. **Kopelson, K.**, Capone-Newton, P., Cowan, B., Borthwick, K., Penamon, C., Gelberg, L. (2022). Facing the Digital Divide: Increasing Video Visits Among Veterans Experiencing Homelessness. Accepted May 4, 2022 to *Annals of Family Medicine*.

## CHAPTER ONE: INTRODUCTION

In response to the national shortage of primary care providers, United States' nursing schools are graduating more than 30,000 Nurse Practitioners (NP) per year (American Association of Colleges of Nursing [AACN], 2020). Many healthcare institutions have developed programs to ensure a successful transition to practice for new NPs, at the present time NP residencies are not required (Kesten et al., 2021). Residency programs have been shown to increase self-efficacy and proficiency to manage patients with complex medical conditions (Le, 2016; Rugen et al., 2018). NP residency programs place an increased demand on clinical preceptors who are also precepting NP students (Kesten et al., 2021). There is a shortage of quality clinical preceptors often associated with fatigue and time commitment to teach students (Hawkins, 2019). Time constraints of precepting and the resulting decrease in productivity is a barrier to keeping preceptors (Logan et al., 2015). Improved self-efficacy and time-management were associated with a desire to continue precepting trainees (Fincham et al., 2019 & Miura et al., 2020). Preceptor training can have a positive impact on preceptor self-efficacy and trainee self-competence (Clipper & Cherry, 2015; Eckstrom et al., 2006; Miura et al., 2020).

Workplace learning is delegated to preceptors according to standards set forth by the American Association of Colleges of Nursing (AACN) Criteria for Evaluation of NP Programs (2016). The standards recommend that NP preceptors should have one year of experience and expertise in the field of practice, but they are not required to have training or proof of precepting ability. Many preceptors have never had formal education on how to precept; not every experienced NP makes a good preceptor (Bazzell & Dains, 2017). The preceptor should enjoy working with students, be patient, well organized, and able to teach while managing work demands (American Association of Colleges of Nursing, 2016). Clinical precepting lacks



standardization and is often based on individual experience or institutional role modeling (Bazzell & Dains, 2017). The trainee's cognitive skills, particularly diagnostic acumen, develop in the clinical setting under the supervision of preceptors. There is a risk for cognitive errors and omissions that lead to misdiagnosis if diagnostic reasoning is underdeveloped, (Richards et al., 2020).

Medical models for precepting have been developed such as the One-Minute Preceptor (OMP) (Neher et al., 1992). Neher et al. (1992) developed the five microskills for medical precepting, that was later named the OMP, which is a practical model consisting of five sequential teaching behaviors described in Table 1. The use of the OMP as a model to teach diagnostic reasoning skills has been used successfully in family practice and internal medicine physician training programs (Gatewood & De Gagne, 2019). Studies have shown that preceptor training courses that cover standardized case presentations have a positive impact on preceptors and trainees (Clipper & Cherry, 2015; Eckstrom et al., 2006; Miura et al., 2020). There has been little use of the OMP in NP trainee programs (Bazzell & Dains, 2017; Fincham et al., 2019; Gatewood et al., 2020; Miura et al., 2020). The use of the OMP model by the preceptor and trainee can potentially optimize NP trainee performance, in particular diagnostic reasoning, and increase satisfaction among the preceptors.

The Doctor of Nursing practice (DNP) prepared educator is uniquely positioned to design appropriate and standardized learning experiences and evaluate outcomes (Chism, 2019). The nurse practitioner residency director utilizes DNP Essential II: Organizational and systems leadership for quality improvement and systems thinking to develop and apply continuous improvement mindsets to clinical teaching. Utilizing DNP Essential I: Scientific underpinnings for practice, this project applied learning theories to advance healthcare delivery and evaluate

outcomes. DNP Essential III: Clinical scholarship and analytical methods for evidence-based practice, was employed to design a precepting program and refine current practices to maximize safety and efficiency during a precepting experience while supporting DNP Essential VIII: Advancing nursing practice by supporting advanced clinical thinking (AACN, 2006).

**Table 1.** *The One-Minute Preceptor (OMP) five sequential teaching behaviors*

Number	Microskill	Preceptor	Learner
1	Get a commitment	Observes diagnostic skill	Develops diagnostic reasoning skills by committing to a hunch, diagnosis, workup or plan
2	Probe for evidence or understanding	Analyzes current knowledge and promotes new knowledge	Links available data with illness scripts
3	Teach a general rule	Teaches a point not known to trainee	Acquires more knowledge specific to the current illness script
4	Reinforce what was done well	Identifies and solidifies accurate reasoning behaviors	Develops self-efficacy
5	Correct mistakes	Constructive feedback to prevent repeated mistakes	Identifies errors in reasoning and improves

Adapted from Neher, J. O., Gordon, K. C., Meyer, B., & Stevens, N. (1992). A five-step "microskills" model of clinical teaching. *The Journal of the American Board of Family Practice*, 5(4), 419–424.

## Problem Statement

Clinical case presentations from the NP trainee to the preceptor often lack a standardized approach. Healthcare institutions place little emphasis on improving diagnostic reasoning despite the importance in providing effective and safe healthcare (Rajkomar & Dhaliwal, 2011). The Department of Veterans Affairs' (VA) second mission is to educate the next generation for VA and the nation (Functions of the Veterans Health Administration Act, 1946). Nurse Practitioners at the VA can be a driving force in healthcare improvement by precepting the next generation of NPs to fill healthcare provider vacancies. The VA Greater Los Angeles Healthcare System

(VAGLAHS) has more than 100 NPs and many are already preceptors but there is no formal preceptor training that teaches how to support diagnostic reasoning.

### **PICOT Question**

Further research is needed to assess the effects of precepting standardization on trainee cognitive skills. This DNP scholarly project will attempt to teach preceptors to elicit trainees to present cases in a way that promotes cognitive development. The project intends to answer the following question: In NP trainees (P), does a standardized case presentation using the OMP (I), compared with the current approach (C) improve diagnostic reasoning skills (measured by a Reporter, Interpreter, Manager, Educator (RIME) competency evaluation) (O), in six weeks (T)? The expected outcome of this quality improvement (QI) project is that the trainee's diagnostic reasoning skills will improve by using a standardized case-based presentation utilizing the OMP model.

## **CHAPTER TWO: THEORETICAL FRAMEWORK**

Patricia Benner's (1982) novice to expert theory was developed to highlight the skill acquisition of professional nurses through situational experiences. The model discusses how an individual begins at the novice stage and progresses through five stages of proficiency to end in the expert realm. Through the five stages, new knowledge and skills are acquired. Benner's (2001) theory has been applied to the advanced practice nursing role transitioning from novice to expert in the same manner. The NP is developing new skills through deductive reasoning to make an independent decision or medical diagnosis. Cognitive learning theory provides a foundation for understanding the process of diagnostic reasoning and how to support development of the thought process in NP trainees (McSparron et al., 2019).

Cognitive learning theory (CLT) was originally published by Jean Piaget in 1936. The theory explains how internal and external factors influence an individual's mental process during learning. The components of CLT are comprehension, memory and application. Learning needs to be beneficial and understandable to enhance comprehension and is built upon prior knowledge or memory and applied to assist in problem-solving. Metacognition is a key component to CLT in which the person is aware and understands their own thought processes which allows the learner to set their own goals or strategies for learning and expectations (Braungart et al., 2018). Memory is boosted by active practice in hypothetical reasoning, testing, and self-identifying gaps in knowledge (Kurt, 2020; McSparron et al., 2019). The basic tenet of CLT according to Braungart & Braungart (2018) is that learners are unique, and teaching must be individualized to meet the level of cognitive development and experience but also the learning style.

The basis of Benner's stages from novice to expert and the principles of CLT can guide the preceptor in optimizing the decision-making process using the OMP. Neher et al. (1992) developed the five microskills for medical precepting which later was named the OMP, which is a practical model consisting of five sequential teaching behaviors described in Table 1. The OMP is comprised of elements consistent with CLT which promotes critical thinking and encourages inductive reasoning through hypothesis generation then evaluates and delivers feedback (Neher et al., 1992, Richards et al., 2020). This time-specific model is designed to support the clinical preceptor in the complex task of developing trainee's cognitive skills while simultaneously managing patients. The preceptor asks the trainee to identify and commit to a diagnosis or workup, asks for supporting evidence which helps the trainee reflect on prior knowledge, teaches to reduce gaps in knowledge, reinforces well-reasoned decisions, and corrects mistakes by asking the trainee to self-reflect verses pointing out errors first (Gatewood

et al., 2020; Neher et al., 1992). The learning opportunity can be longer than a minute and the duration is often based on the individual's needs and complexity of the case. Precepting models provide trainees a standardized approach to learning. Bazzell and Dains' (2017) literature review found that there was an improvement in clinical reasoning using structured teaching methods compared to usual precepting.

Assessment of the trainee's stage of development is also the basis for the preceptor to provide clinical learning experiences. The preceptor's assessment of the trainee's diagnostic reasoning is undertaken while simultaneously assessing and diagnosing the patient and juggling clinical flow. Clinical supervision requires a depth of knowledge for assessing the trainee's clinical competence level as demonstrated by their clinical physical exam, other manual skills, and clinical diagnostic reasoning. Assessment frameworks try to categorize development. This complicates precepting, according to Pangaro (2018), because trainees develop in multiple domains simultaneously. The RIME framework stages were developed by Pangaro (1999) as a quick and easier way to assess the trainee in the clinical setting (Table 2). Measurement of knowledge, skill and attitudes as discrete competencies is not consistent with typical development as the trainee moves from novice to expert. Pangaro noted that knowledge, skills, and attitudes are enmeshed, making it a challenge to sort competencies for measurement or discrete precepting goals. The entrustable professional activities (EPAs) framework which links core competencies and milestones are useful in standardizing medical education and expectations, but graduates may not actually be performing the activities (Englander et al., 2016; Holzhausen et al, 2020). The RIME evaluation framework is relevant and well-studied to measure trainee's level of EPAs and is more consistent with CLT and the new NP's movement from novice to expert (Meyer et al., 2018; Pangaro & ten Cate, 2013).

**Table 2.** *The RIME evaluation framework stages of development in the trainee diagnostician:*

<b>Stage</b>	<b>Definition</b>	<b>Score</b>
<b>Reporter</b>	Reliably communicates clinical findings	1
<b>Interpreter</b>	Prioritizes and analyzes problems	2
<b>Manager</b>	Considers patient preferences	3
<b>Educator</b>	Consistently builds upon knowledge to apply to specific patients	4

DeWitt, D., Carline, J., Paauw, D., & Pangaro, L. (2008). Pilot study of a 'RIME'-based tool for giving feedback in a multi-specialty longitudinal clerkship. *Medical Education*, 42(12), 1205–1209. <https://doi.org/10.1111/j.1365-2923.2008.03229.x>

### CHAPTER THREE: REVIEW OF LITERATURE

A literature search was conducted using the search engines: Cumulative Index to Nursing and Allied Health Literature (CINAHL) Plus, PubMed, and APA PsycInfo. The Boolean search terms used in CINAHL Plus that resulted in three studies were: clinical reasoning and nurse practitioner (two results), clinical reasoning and one-minute preceptor (zero results), nurse practitioner and one-minute preceptor (zero results). The search terms in APA PsycInfo that resulted in two studies were clinical reasoning AND one-minute preceptor (one result), nurse practitioner and precepting (zero results). The search terms in PubMed that resulted in 224 articles were clinical reasoning and nurse practitioner (83 results), clinical reasoning and one-minute preceptor (10 results), nurse practitioner and one-minute preceptor (five results), nurse practitioner and diagnostic reasoning (50 results), RIME and Recorder/Reporter – Interpreter – Manager – Educator (41 results). The methodology used to scan the literature for applicable articles was to find the population served (advanced practice nursing or medical trainee) and whether there was an identifiable tool, model, framework, or method for precepting that could be replicated in the project. Articles were excluded if published before 2015, non-English, abstracts,

review articles, and duplicates were removed. There was a total of 90 articles that met inclusion criteria of relevance based on title, narrowed to 17 after abstract review, and 10 final articles were selected that best answer the PICO question (see Table of Evidence, Appendix F). The references of the articles selected were assessed for missing publications in the search resulting in inclusion of some articles that predate 2015.

### **Review of the Literature**

Several of these studies suggest the need for further testing in a population of NP preceptors (Gatewood et al., 2020; Fincham et al., 2019). Studies reviewed provided a reproducible precepting teaching strategy model that included numerous QI projects (Cohen & Truglio, 2017; Eckstrom et al., 2006; Fincham et al., 2019; Furney et al., 2001; Gatewood et al., 2019; Miura et al., 2020; Perryman, 2022; Servey & Wyrick, 2018), one pilot quasi-experimental study (Lyons et al., 2019) and one randomized control trial (RCT) (Aagaard et al., 2004). Many NP articles identified a preceptor shortage or a challenge retaining preceptors (Clipper & Cherry, 2015; Gatewood et al., 2019; Miura et al., 2020). Medical precepting studies did not describe a preceptor shortage problem and described precepting in a faculty development career path (Eckstrom et al., 2006; Furney et al., 2001). Clinical experiences were identified as an essential component and preceptor as an essential partner in educating advanced practice trainees (Kesten & El-Banna, 2021; Logan et al., 2015). Intervention effects were studied most often in preceptors and less in trainees, either by subjective preceptor assessment or objective skills improvement in preceptors or trainees (Cohen & Truglio, 2017; Eckstrom et al., 2006; Fincham et al., 2019; Furney et al., 2001; Gatewood et al., 2019; Miura et al., 2020; Perryman, 2022; Servey & Wyrick, 2018). A challenge in the precepting literature is teaching in the clinical moment. Several precepting models exist to help preceptors teach but RCTs are rare due to the nature of

the experience not being conducive to this type of study (Aagaard et al., 2004). Bazzell and Dains (2017) conducted a literature review but found just one RCT in medicine and a dearth of literature on NP trainee development. Precepting models have been studied but few studies are high quality research. Three studies applying the OMP to NPs have shown benefit to NP preceptors (Gatewood et al., 2020; Fincham et al., 2019; Miura et al., 2020).

### **Preceptor Models for Clinical Teaching**

Aagaard et al. (2004) conducted an OMP proof of concept study for diagnosing the patient and the learner. The authors recorded two standardized videos of two cases presented with the usual precepting and OMP precepting and then arranged them in four ways – by case order and by model order for a within group experimental design. Preceptor participants were able to correctly diagnose the standardized patient in the video with OMP meeting statistical significance ( $p=.02$ ). The study showed that 35% are familiar with the OMP, 16% had used OMP and 7% were able to identify three or more steps but none remembered all five steps. Repeated measures analysis of variance (ANOVA) was used to study variance in preceptor scores. Preceptors were able to correctly diagnose with OMP ( $p=.02$ ) but there was no significant difference in ability to rate the learner between the two precepting groups. Efficiency and effectiveness were greater for the OMP precepting ( $p<.001$ ). There was no significant difference in rating based on experience except for clinical reasoning which was higher for OMP exposed preceptors ( $p=.01$ ). Preceptors rated the OMP more effective than traditional precepting and more efficient, but this was hypothetical and based on video interpretation, therefore the study lacked validity and reliability. This study design could be applied to the VA NP preceptors, but the videos or case simulations are designed for medical residents and not NP trainees.



Eckstrom et al. (2006) conducted a nonrandomized controlled study with pre and post-test design to develop and evaluate a faculty self-assessment survey questionnaire for an enhanced OMP faculty development lecture. There were 22 of 68 faculty preceptor participants that completed the pre and post survey and 58 out of 94 residents that completed the pre and post survey. The authors achieved an internal validity or internal consistency (Cronbach's alpha 0.71 to 0.80) for the Faculty Self-Assessment survey, which measured self-efficacy and not just satisfaction. The Faculty Self-Assessment survey showed significant improvement in three of five OMP microskills: (1) get a commitment; 2) probe for supporting evidence; and 4) give positive reinforcement) and correlated with OMP knowledge, with Cronbach's alpha for internal consistency distinguishing trained and untrained faculty. Pre- and post-faculty self-ratings were compared using paired *t* tests but did not meet statistical significance. Resident assessments of faculty showed improvements in four of five microskills were not statistically significant. A trainee questionnaire assessed the internal medicine faculty effectiveness in using the OMP to precept residents. Resident assessment of preceptors who completed the lecture assessed frequency of teaching behaviors and satisfaction with teaching. The control group was preceptors who did not participate therefore this study lacks reliability as a non-RCT.

Servey and Wyrick (2018) conducted a QI OMP training using role-play at 16 sessions in different military teaching hospital locations with a convenience sample of 294 participants from various physician specialties. This study used Kolb's experiential learning theory as a basis for education programming, including elements of didactics, videos, role-modeling, and discussion, consistent with CLT. Statistical significance was not reported but 90% of preceptors continued to use the OMP up to four years later. The session lasted 60 minutes and most participants found it favorable for being organized and useful in a non-validated survey. The training presentation is

available online with teaching materials covering various specialties however, it lacks reliability and validity but is applicable to the VA NP preceptor population (e.g., could provide a lunch-time lecture).

A study by Gatewood et al. (2020) provided a two-hour OMP training intervention in person with 57 preceptor participants spread over two occasions. The sample included NPs, physicians, and psychologists; it was preceded by a survey and followed up with a validated survey tool. The results were positive for intent to use microskills four (reinforce what was done well) and five (correct mistakes) ( $p = .05$ ) and motivation to use the OMP ( $p = .05$ ) when precepting NP students. No difference was found in OMP use by profession. The advantages of this study for VAGLAHS, were the survey tool, Use of the Teaching Skills, and detailed description of the intervention. The limitations were that it lacked reliability as it was not an RCT, did not test in the clinical setting, and did not measure retention of information.

Fincham et al. (2019) conducted a QI project intended to teach preceptors clinical educator skills to apply when precepting and evaluate the effectiveness of the training. The intervention started with a pilot training which was followed by additional training over 12 months. Training consisted of a one-hour PowerPoint presentation with embedded videos, and included orienting the student, RIME, OMP, and giving feedback. The logistics of how to communicate with the students' university faculty was also included. The sample was 58 preceptors which included advanced practice registered nurses (APRNs), physicians, physician assistants, pharmacists, and dietitians. There was a post-survey immediately following the training with descriptive statistics used to calculate percentages in responses. Evaluations were 96-100% positive for the measured perceptions of the training and 72% said they would use a component of the training. Most of the preceptor participants (86%) had not had training in

RIME or OMP (80%). In addition, APRN preceptors had less training in RIME (10%) and OMP (16%) compared to other disciplines. Limitations were that this was a QI project and the training was evaluated by a perceptions survey rather than a knowledge or skills application survey. Application of the concepts was identified as a future area of study. The study lacks validity and reliability; however, it has applicability to the VA NP preceptor population to teach how to use the RIME and OMP in a one-hour lunch-time lecture.

Miura et al. (2020) conducted a QI pilot study to develop an NP preceptor training program and assess the effects on willingness to precept and preceptor self-efficacy. The training program recruited 29 with nine ultimate participants (secondary to scheduling constraints) featured the OMP, was preceded by a demographic questionnaire, Willingness to Precept Questionnaire and NP Preceptor Self-Efficacy Questionnaire, in a 21 question, Likert scale with a range from 1 (completely lacking confidence) to 6 (completely confident). The Willingness Questionnaire was seeking to understand the barriers to precepting and whether training would reduce barriers. The Self-efficacy Questionnaire was used to assess if there were improvements in comfort pre- and post-intervention. The program was feasible, lasting one and a half hours and was followed with Willingness and Self-Efficacy Questionnaires plus a course evaluation. The Willingness and Self-Efficacy Questionnaires were repeated again at three months post program. A significant improvement in self-efficacy scores were noted between pre and three months post-program in six of 18 measures suggesting the ability to practice the OMP increased confidence (44.4%). Willingness to precept showed 85.7% “agreed” or “strongly agreed” that the OMP program was beneficial and had a positive effect on their decision to precept in the future. The small sample size and single center were limitations, and a further study is needed to assess NP preceptor training program efficacy.

Furney et al. (2001) studied medical residents precepting medical students; this study lacks validity for NP population but met statistical significance for four of five microskills. There were four outcome types noted: student evaluation models, preceptor evaluation models, improvements in teaching behavior, and student learning outcomes. Resident self-report showed significance in microskills 1) get a commitment, 2) probe, and 4) feedback ( $p < .01$ ). Student ratings of resident preceptors were significant for microskills 1) commitment, 2) probe, 4) feedback suggestions and frequency, overall – motivate to read ( $p = .05$ ). Conversely, Lyons et al. (2019) found conflicting results in their quasi-experimental pilot study in that OMP trained pharmacy preceptors asked more of the right questions, but non-OMP trained preceptor's pharmacy trainees articulated more assessments, treatment plans, discussion, and reasoning without prompts.

## **Critical Analysis of the Literature**

### **Types of Preceptor Education**

Educational didactics, videos, role-play, and discussion were used in various combinations to educate preceptors (Aagaard et al., 2004; Cohen & Truglio, 2017; Eckstrom et al., 2006; Fincham et al., 2019; Gatewood et al., 2020; Miura et al., 2020; Servey & Wyrick, 2018). Variables measured were inconsistent across studies and outcomes measures were inconsistent with great variation in depth of statistical analysis, so it is impossible to state with certainty that one method was better than another. Mixed methods interventions were favored by preceptors, but role-play was not always appreciated (Gatewood et al., 2020; Fincham et al., 2019; Miura et al., 2020; Servey & Wyrick, 2018). Some had improvements in some preceptor OMP microskills, but none showed improvement in all five microskills. Aagaard et al. (2004) was uniquely only a video simulation.

## **Types of Provider and Population**

Earlier studies were physician only, including those from outpatient internal medicine, family medicine, other medical specialties, inpatient physicians, and occasional allied health profession (Aagaard et al., 2004; Eckstrom et al., 2006; Furney et al., 2001; Servey & Wyrick, 2018). Recent studies have included other preceptor types such as NPs (Fincham et al., 2019; Gatewood et al., 2020; Miura et al., 2020) and pharmacists (Lyons et al., 2019).

## **Outcomes Measures**

Three recent studies applying the OMP to NP precepting have shown benefit in subjective outcomes measures (Gatewood et al., 2020; Fincham et al., 2019; Miura et al., 2020). Described in seven of the ten studies reviewed, measures included self-assessment and student assessment (Cohen & Truglio, 2017; Eckstrom et al., 2006; Fincham et al., 2019; Furney et al., 2001; Gatewood et al., 2020; Miura et al., 2020; Servey & Wyrick, 2018). Eckstrom et al. (2006), Gatewood et al. (2020), Miura et al. (2020) and Perryman (2022) either established validity or used a validated tool to measure various outcomes. The other studies used tools that were created by the investigators for program evaluation and were not tested for validity or reliability. Lyons et al. (2019) designed a novel study that objectively measured OMP versus usual precepting utilizing a qualitative assessment of taped precepting sessions. Aagaard et al. (2004) objectively measured preceptor ratings of the learner and preceptors' subjective efficacy rating of the OMP. The studies that reached significance noted improvements in specific microskills teaching and in self-efficacy (Aagaard et al., 2004; Eckstrom et al., 2006; Furney et al., 2001; Gatewood et al., 2020; Lyons et al., 2019; Miura et al., 2020).

## **Gaps in the Literature**

Most of the research using the OMP was conducted with family and internal medicine residents; only three studies applied to NPs and focused on the NP preceptor rather than NP trainee, with few outcomes reaching statistical significance. Study limitations were small sample sizes, no power analysis reported, or lack of a reliable and valid outcome measure used to assess diagnostic reasoning. None of the studies explicitly taught NP trainees how to present a patient using the OMP. A logical next step is to measure the effect of the OMP on the NP trainee. The research question aims to determine the effect of preceptor coaching of NP trainees to present cases in an OMP format (Neher et al., 1992).

The OMP filled a need for a practical teaching model and is one of the more widely used and tested preceptor models yet there is still relatively little of the strongest evidence (Neher et al., 1992). Proof of concept exists in smaller less valid and reliable studies and QI projects since RCTs would be extremely complicated to carry out in the busy and dynamic clinical setting with preceptors, trainees, and patients. Applying any of the three OMP lecture interventions in the VA NP preceptor population would be feasible to offer during a lunchtime presentation and utilizing their measurement tools (e.g., Faculty Self-Assessment Survey [Eckstrom et al. (2006)] the Use of the Teaching Skills survey [Gatewood et al. (2020)] or the Self-Efficacy Tool [Miura et al. (2020)]).

## **DNP Leadership, Interprofessional Practice, and Implications**

The DNP prepared nurse seeks leadership opportunities to drive healthcare improvement and applies scientific underpinnings to advance clinical scholarship using analytical methods resulting in contributions to evidence-based practice (AACN, 2006). The DNP Scholarly Project on precepting is an opportunity to advance nursing practice with interprofessional and ethical

implications. There is an obligation to increase safety in training and healthcare which can influence health policy through institutional or organizational standards consistent with DNP Essential V (AACN, 2006). Leadership applied to systems and organizational improvement can lead to significant healthcare improvements. The precepting improvement project at the VAGLAHS must be carefully planned and leadership style thoughtfully and skillfully applied to garner executive and middle management support, inspire NP preceptor participation, and develop policy for lasting change. The project significance is precepting training and standardization which is paramount for systematically increasing diagnostic reasoning in trainees. The intervention may be tested in other disciplines and between disciplines.

## CHAPTER FOUR: METHODS

### **Ethical Considerations**

This QI project was reviewed by the University of California, Los Angeles and the VAGLAHS Institutional Review Boards. These boards determined that the project does not meet the definition of human subjects research and that a formal review is not required.

### **Project Design**

A CLT based standardized approach to precepting using the OMP with measurement based in Benner's Novice to Expert using the RIME was implemented based on available knowledge of current precepting challenges at the VAGLAHS. The QI project was a single center, Plan-Do-Study-Act (PDSA) design (Knudsen et al., 2019). This involved the following: (a) evaluating preceptors' current knowledge regarding OMP and RIME framework; (b) implementation of an educational lecture to fill identified gaps; (c) preceptors identifying their trainee's current diagnostic reasoning skills level using RIME framework; (d) standardized education delivery to trainee that explains the OMP model to guide future case presentations and

RIME framework to evaluate progress; and, (e) a weekly evaluation of trainees' diagnostic reasoning skills using RIME framework. Elements of the project design are outlined in Table 3.

**Table 3** *Project Design*

<b>Step</b>	<b>Activity</b>
<i>Pre-Intervention Phase</i>	
1	Assessed gaps in NP preceptor knowledge of OMP and RIME
2	Implemented educational lecture to fulfill identified gaps and standardize scoring
3	NP preceptor assessed trainee diagnostic reasoning skills level using RIME framework at six time points, providing rationale for the score
<i>Intervention Phase</i>	
4	NP preceptors were taught to teach trainee to present the case with OMP microskills one and two and the RIME framework with a teach-back component to assure a standard approach
5	NP preceptor delivered a standardized education to trainee that explained the OMP model to guide future case presentations and RIME framework to evaluate progress
6	NP preceptor assessed trainee diagnostic reasoning skills level using RIME framework at six time points and use it for instructional dialogue
7	Project Director assessed progress of trainees at end of six weeks.
8	Project Director provided preceptor feedback to trainees and made individual plans for improvement
9	NP preceptor assessed trainee diagnostic reasoning skills level using RIME framework at six time points and use it for instructional dialogue
10	NP preceptor and trainee completed a program evaluation at end of precepting period

NP= Nurse Practitioner; OMP = One Minute Preceptor; RIME = Recorder/Reporter – Interpreter – Manager – Educator

### **Sample and Setting**

The project was conducted at the VAGLAHS outpatient primary care, medical and surgical clinics. A convenience sample of 11 NP preceptors and four trainees were used, and recruitment took place through email. Inclusion criteria were active NP preceptors who had national certification in their practice specialty, practiced at least one year with expertise in their clinic, and met all VA and federal employment requirements.



Exclusion criteria were NP preceptors who were not precepting or working during the study period. NPs practicing less than one year were excluded because current national regulation requires one year minimum experience to precept according to AACN's Criteria for Evaluation of Nurse Practitioner Programs (2016).

NP trainees who were included were competitively selected for a one-year post-graduate residency program and had not practiced post-licensure prior to the start of the program. The VA recruitment rules required the trainees have national NP certification, state licensure, graduated from a nationally accredited university, and met all other VA and federal employment requirements.

## **Implementation and Data Collection**

### **Procedures**

PDSA Cycle 1: Based on a needs assessment survey of preceptor's current knowledge and precepting practices regarding the OMP model and RIME framework evaluation of trainees diagnostic reasoning skills, knowledge gaps were addressed with a tailored educational lecture by the Project Director on how to use the RIME and checked for understanding. Preceptors then rated their trainee weekly during a six-week period. Each trainee was assigned two or more rotations weekly, and each preceptor rated the current RIME stage of their trainee once a week. The Project Director collected the weekly data and averaged the numerical rating for each trainee (see Data Collection Timeline, Appendix A).

The preceptors were taught to educate the trainee regarding the OMP model and RIME framework after the eleven-week pre-intervention period was complete. The NP Preceptor Self-Efficacy Questionnaire and Use of the Teaching Skills were administered (Gatewood et al., 2020; Miura et al., 2020). The Project Director gave a lecture and role-modeled how to teach

trainees to use the RIME framework to evaluate themselves and use OMP microskills one and two. Return demonstrations by the preceptors of the OMP and RIME teaching intended for trainees occurred using role modeling. Each preceptor was evaluated for a standardized method of teaching to the trainees with feedback to reinforce consistency. The lecture intervention with the preceptors was approximately one hour and repeated four times for so all preceptors could participate. The lecture was feasible and practical in that it could be conducted in person or online using a standard platform accessible to all VA employees, Microsoft Teams, the program was provided online and breakout rooms were used for role playing.

The post-intervention phase began the week after the intervention. The preceptors introduced the OMP model to trainees to guide future case presentations and the RIME framework to evaluate their progress during the next six weeks. The trainee use of the OMP microskills one and two was reinforced by preceptors during the case presentations. Measurement of RIME levels continued as a shared activity with the trainees. At the end of each week, the trainee met with the preceptor and self-assessed their diagnostic reasoning skills using the RIME framework. The preceptor and trainee compared and discussed their scores as a foundation to facilitate concurrence and further dialogue on improvement.

The weekly RIME assessments were collected and enumerated by the Project Director. Evaluating data on a weekly basis pre and post intervention, the Project Director found individual scores revealed an outlier not at goal. Another PDSA after week six was necessary to attain the desired improvement in RIME scores. PDSA Cycle 2: Started week seven with one-to-one meetings between trainees and the Program Director content highlighted preceptor feedback for individualized plans for improvement. The OMP and RIME activities carried on as in PDSA Cycle 1 for weeks seven through 12.

The program evaluation for both preceptors and trainees was conducted at the end of the precepting period to assess the effectiveness of the OMP intervention in increasing NP trainees' diagnostic skills and collect demographic characteristics of participants. This included preceptors repeating the NP Preceptor Self-Efficacy Questionnaire and Use of the Teaching Skills (Gatewood et al., 2020; Miura et al., 2020).

### **Measures/Instruments/Tools**

Teaching plans were developed and tested in the literature that can be applied in the VA NP population (Fincham et al., 2019; Gatewood et al., 2020; Servey & Wyrick, 2018). The needs assessment and evaluation incorporated validated questionnaires that were practical and feasible for assessing the preceptor (Gatewood et al., 2020; Miura et al., 2020) (See Appendix B for an explanation of performance outcomes metrics).

### **Use of the Teaching Skills**

A validated 11-item survey evaluated use of the five OMP microskills. Participants were asked to rate how frequently they used each skill on a 7-point Likert scale (1= every time, 7 = never) to assess preceptor intent and motivation to use the OMP (Gatewood et al., 2020). The original source for reliability and validity was not referenced in the article.

### **NP Preceptor Self-Efficacy Questionnaire**

Miura et al. (2020) adapted a Parson's validated Preceptor Self-Efficacy Instrument (Cronbach's alpha 0.93) into the NP Self- Efficacy Questionnaire. This 21 Likert scale questionnaire has a scale ranging from 1 (completely lacking in confidence) to 6 (completely confident) which was applied to the preceptor population at the VA to assess preceptor self-efficacy and intention to continue precepting.

## **RIME Framework**

Preceptors assessed trainee diagnostic reasoning weekly pre- and post-intervention using the RIME which was demonstrated to have an inter-rater reliability of 0.8 (Pangaro, 1999). Ryan et al (2021) used a numeric 4-point scale for the RIME stages (Reporter = 1 to Educator = 4) to devise a scoring system (Table 2). This article assessed generalizability and decision studies to assess reliability and validity of the RIME framework. Reliability was determined at 0.70 according to the number of assessments using the framework (7 to 12 assessments). Validity was assessed by the proportion of the variances attributed to the learner based on clinical settings (18.7% internal medicine to 25.4% surgery) which supported validity based on clinical context (Ryan et al., 2021).

## **Preceptor and Trainee Characteristics**

Other variables of interest were surveyed including the academic year and RN experience of the trainee and for preceptors, education (master's or DNP), years as an NP, years in current position, work percentage (e.g., part-time, full-time), and years as a preceptor. Other preceptor variables are previous formal educational instruction in precepting, informal education through reading, previous use of a competency evaluation framework, previous use of a precepting model, and confidence in precepting ability [Appendix C & D].

## **Budget/Business Plan**

Costs to VA were in kind for preceptor development programming and staff participation which occurred during education time or lunch time. The time to develop and deliver the study was incurred by the Project Director. Official Without Compensation status was granted to the Project Director to conduct the study by the VAGLAHS Nursing Education Department in

accordance with the VA Office of Academic Affiliations rules. The PowerPoint software and delivery mechanism, Microsoft Teams, were available for use by all VA employees.

## **Analysis**

The primary outcome was the post-intervention weekly RIME scores. These scores were calculated and summed to compare pre and post scores. The secondary outcomes were trainee and preceptor-ratings as measured by the program evaluation. Preceptor and trainee characteristics were also described.

Descriptive statistics (means, SD for continuous variables; percentages, and frequencies for categorical variables) were used to assess demographic characteristics of the preceptors and trainees, survey responses, and RIME numeric value. A paired sample *t*-test was used to compare the differences between mean scores pre- and post-intervention (e.g. RIME, NP Preceptor Self-Efficacy, and Use of the Teaching Skills mean scores). Statistical significance is  $p \leq 0.05$ . The Statistical Package for Social Sciences (SPSS) version 27 (IBM; Somers, NY) was used for analysis of the data.

## CHAPTER FIVE: RESULTS

### **Preceptor and Trainee Characteristics**

There were a total of 15 nurse practitioners that participated (11 preceptors and 4 trainees). The preceptor and trainee characteristics are listed in Table 4. All preceptors were female (100%), the majority white (46%), mean age of 43 (SD 10.6), 4 with DNP degrees, mean 13 years (SD 8.6) of NP experience, 7.5 (SD 8.3) years of precepting, and worked full time (91%) in primary care. The majority of trainees were female (75%), Asian (50%), mean age 32 (SD 5.7), had a master's degree (75%), and mean RN experience 2.5 years (SD 3.1).

**Table 4.** *Characteristics of Preceptors and Trainees*

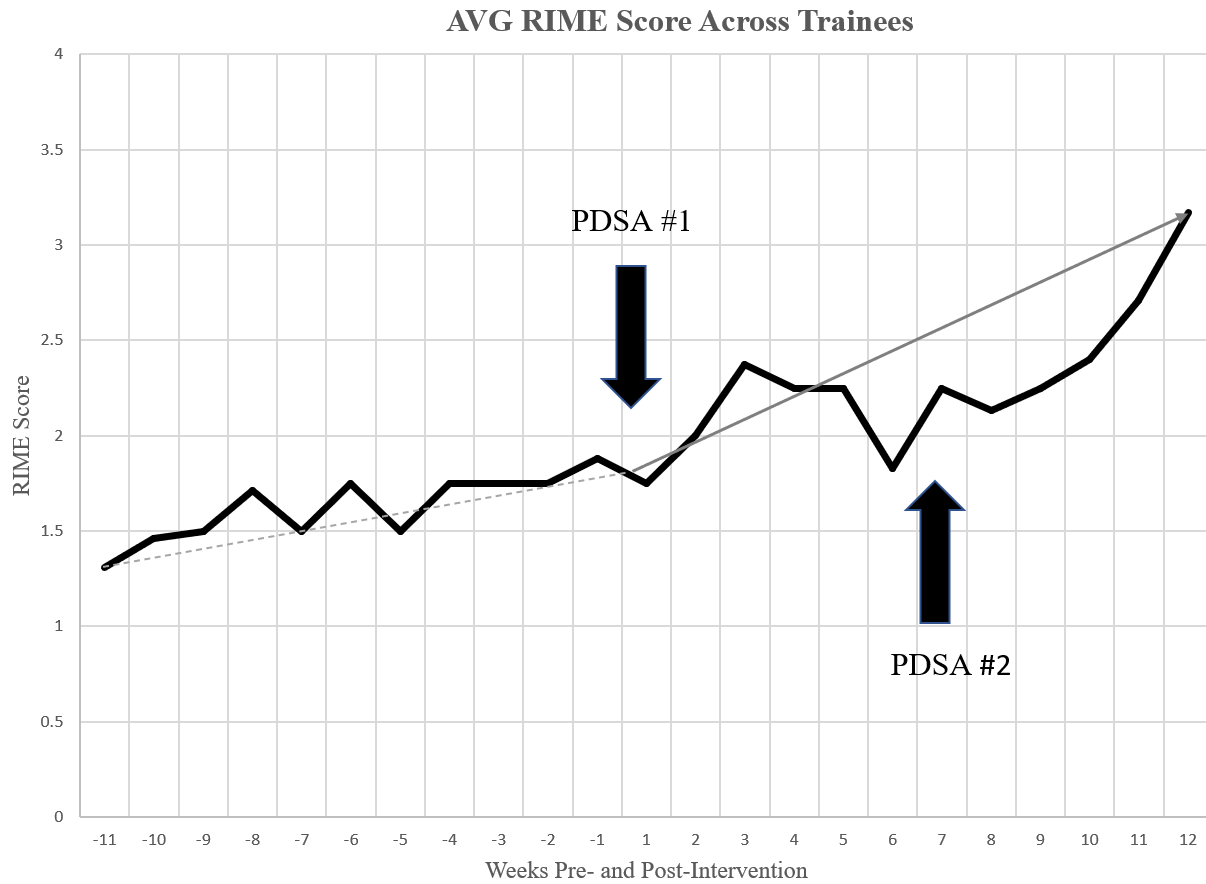
Characteristics	Preceptors [n=11]	Trainees [n=4]
	Mean [SD] or n [%]	
Age, years (range 28-62)	43 [10.6]	32 [5.7]
Gender [Female]	11 [100%]	3 [75%]
Ethnicity		
White	5 [46%]	1 [25%]
Asian	4 [36%]	2 [50%]
Black	2 [18%]	0 [0%]
Hispanic	0 [0%]	1 [25%]
Education or program enrolled		
Masters	7 [64 %]	3 [75%]
Doctor of Nursing Practice	4 [36 %]	1 [25%]
Years RN Experience (range 1-40, preceptors; range 0-7, trainees)	19 [11.5]	2.5 [3.1]
Years NP Experience (range 2-25)	13 [8.6]	N/A
Work Status		N/A
Full-time	10 [91%]	
Part-time	1 [9%]	
Years Precepting Experience (range 0-25)	7.5 [8.3]	N/A
Previous Preceptor Training [No]	9 [82%]	N/A
University Affiliation [Yes]	7 [64%]	N/A
Clinic Setting (can have more than one)		N/A
Primary Care	6 [55%]	
Urology	1 [9%]	
Nephrology	1 [9%]	
Diabetes	1 [9%]	
Women's Health	2 [18%]	
Allergy / Immunology	1 [9%]	

RN= Registered Nurse; NP= Nurse Practitioner

### Intervention Results

Weekly average RIME scores pre- and post-intervention are presented in Figure 1. There was a statistically significant improvement in mean RIME score between pre- and post-intervention (1.62 [0.17] vs. 2.23 [0.38],  $p < .001$ ), respectively [PDSA Cycle 1 and 2; weeks 1-6]. The mean RIME scores continued to improve (2.07 [0.25] vs. 2.48 [0.39],  $p < .001$ ), respectively (After PDSA Cycle 2; weeks 7-12).

**Figure 1: Weekly Averaged RIME Scores Pre- and Post-Intervention**



Mean preceptor self-efficacy, use of the teaching skills, and RIME scores are showed in Table 5. The means scores showed improvement but were not statistically significant. For use of the teaching skills, lower scores indicate improvement. RIME score were statistically significant between pre- and post-intervention.

**Table 5. RIME, Self-Efficacy and Use of the Teaching Skills Scores Pre and Post-Intervention**

Questionnaires / RIME Scores	Pre-Intervention	Post-Intervention	P-Value
	[Weeks 0]	[Weeks 12]	
	Mean [SD]		
NP Preceptor Self-Efficacy (†range 21-126)	106 [14.3]	109 [10.1]	.211
Use of the Teaching Skills (†range 11-77)	26.8 [12.3]	25.9 [7.3]	.746
RIME Scores	1.62 [0.17]	2.23 [0.38]	<.001*

NP= Nurse Practitioner; RIME = Reporter, Interpreter, Manager and Educator; † = Instrument range; \**t*-test  $p < 0.05$

## Preceptor and Trainee Program Survey Responses

The NP trainee survey questions and responses are reported in Table 6 and the preceptor responses in Table 7. The majority of trainees (100%) and preceptors (91%) reported the OMP and RIME were helpful to facilitate learning when precepting. Two trainees (50%) reported not using the OMP. Most preceptors agreed with time burden (63%), productivity (64%) and lack of space (54%) and administrative support (55%) to be factors influencing their ability to precept. The majority felt they had teaching training (63%) and program support (63%).

**Table 6.** NP Trainee Survey on Use of the RIME, One Minute Preceptor, and Comments

Survey Questions	Response [n=4]*
In the last two months, one or more of my preceptors have educated me about and then utilized the Reporter-Interpreter-Manager-Educator (RIME) framework during precepting.	<b>2 [50%] Two preceptors</b> 1 [25%] Four preceptors 1 [25%] Five or more preceptors
In the last two months, one or more of my preceptors have educated me about and then utilized the One-Minute Preceptor (OMP) model during precepting.	1 [25%] Two preceptors 1 [25%] Four preceptors <b>2 [50%] None</b>
Use of the RIME framework with my preceptor clarified what we needed to work on to advance my clinical skills.	1 [25%] About half the time <b>3 [75%] Almost always</b> 1 [25%] Always
When used, the OMP microskills #1 - make a commitment to a diagnosis, differential diagnoses, or a work-up, and #2 - state the rationale for #1, facilitated the development of my diagnostic reasoning	1 [25%] Almost always 1 [25%] Almost never 1 [25%] Never
Preceptors who explicitly used the RIME and OMP in precepted experiences enhanced my clinical learning.	<b>3 [75%] Agree</b> 1 [25%] Strongly Agree
Use of the RIME and OMP together results in more effective precepting.	<b>3 [75%] Agree</b> 1 [25%] Neither agree nor disagree
<b>Optional comments about the RIME, OMP, or precepting:</b>	
<ul style="list-style-type: none"> <li>• <b>Trainee # 1:</b> <i>“RIME is helpful b/c it provides a constructive framework for feedback. I am not familiar with the OMP as my preceptors have not used it.”</i></li> <li>• <b>Trainee # 2:</b> <i>“I don't think RIME is useful to do every week since I feel like there are minimal changes. It feels more useful to do every quarter or month to reflect on as a whole. One thing I did find useful is that RIME gave me an opportunity to reflect on instances in which I felt like I could improve on or that I did well in.”</i></li> </ul>	



- **Trainee # 3:** “It gave me a unique way to think about my development.”
- **Trainee # 4:** “It has been helpful to have some standardized evaluation with preceptors across different specialties but I do feel that the interpretation of RIME does vary by preceptor.”

\* Majorities are highlighted in bold

**Table 7.** Preceptor Evaluation of the RIME, One Minute Preceptor and Teaching Skills

Survey Questions	Response [n=11]*
Using the Reporter-Interpreter-Manager-Educator (RIME) framework enhanced precepting communication with the trainee.	1 [9%]Strongly Agree <b>8 [73%]Agree</b> 2 [18%]Somewhat Agree
Using the RIME framework enhanced communication with other preceptors.	1 [9%]Strongly Agree <b>5 [45.5%]Agree</b> 3 [27%]Somewhat Agree 2 [18%]Neither agree nor disagree
I plan to use the RIME framework in future precepting.	2 [18%]Strongly Agree <b>9 [82%]Agree</b>
Using the OMP model helped me support the development of the trainee's diagnostic reasoning.	1 [9%]Strongly Agree <b>9 [82%]Agree</b> 2 [9%]Somewhat Agree
I plan to use the OMP model in future precepting.	2 [18%]Strongly Agree <b>9 [82%]Agree</b>
What factors influence your ability to precept a student? Time burden of teaching	<b>3 [27%]Strongly Agree</b> <b>4 [36%]Agree</b> <b>1 [9%]Somewhat Agree</b> 3 [27%]Disagree
What factors influence your ability to precept a student? Productivity Demands	<b>1 [9%]Strongly Agree</b> <b>6 [55%]Agree</b> <b>2 [18%]Somewhat Agree</b> 1 [9%]Neither agree nor disagree 1 [9%]Disagree
What factors influence your ability to precept a student? Lack of Administrative Support	<b>5 [46%]Agree</b> <b>1 [9%]Somewhat Agree</b> 1 [9%]Neither agree nor disagree 2 [18%] Disagree 2 [18%] Strongly Disagree
What factors influence your ability to precept a student? Lack of teaching training	2 [18%]Somewhat Agree 2 [18%]Neither agree nor disagree <b>1 [9%]Somewhat Disagree</b> <b>3 [27%]Disagree</b> <b>3 [27%]Strongly Disagree</b>

What factors influence your ability to precept a student? Insufficient program support	2 [18%]Agree 2 [18%]Neither agree nor disagree <b>2 [18%]Somewhat Disagree</b> <b>3 [27%]Disagree</b> <b>2 [18%]Strongly Disagree</b>
What factors influence your ability to precept a student? Lack of space	<b>3 [27%]Strongly Agree</b> <b>1 [9%]Agree</b> <b>2 [18%]Somewhat Agree</b> 2 [18%]Neither agree nor disagree 3 [27%]Disagree

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\* Majorities are highlighted in bold

## CHAPTER SIX: DISCUSSION

The main findings from this QI project showed that an educational intervention to standardize precepting techniques among preceptors using the OMP model improved trainee scores as measured by the RIME framework at six weeks and continued to improve at 12 weeks. Applying evidenced based techniques was used to standardize precepting with the majority of preceptors wanting to continue using the OMP and RIME in the clinical setting.

The DNP Scholarly Project showed similar findings regarding NP preceptors' lack of exposure to the OMP and RIME but positive intent to use the OMP and RIME following the training (Fincham et al., 2019). Conversely, physician preceptors had more familiarity with the OMP at baseline than did the NPs as this model was developed by Neher et al. (1992) for medical education and only recently more widely adopted by NPs (Aagaard et al, 2004; Cohen & Truglio, 2017; Eckstrom et al., 2006; Fincham et al., 2019; Furney et al., 2001; Gatewood et al., 2019; Servey & Wyrick, 2018).

Other studies had similar findings that the OMP was an effective learning tool in family and internal medicine providers, and studies that included NPs as measured by surveys (Cohen & Truglio, 2017; Eckstrom et al., 2006; Fincham et al., 2019; Furney et al., 2001; Gatewood et al., 2019; Miura et al., 2020; Perryman, 2022; Servey & Wyrick, 2018).

In contrast to many studies, the project evaluated the effect of practicing the OMP on both preceptors and trainees through surveys. Previous OMP studies with NPs had only measured the effect on preceptors and not measured the effect on NP trainees per this project (Cohen & Truglio, 2017; Fincham et al., 2019; Gatewood et al., 2019; Miura et al., 2020; Perryman, 2022). A few OMP studies measured effects on non-NP trainees but our findings could not be directly compared to Lyons et al. (2019) who found that the control group more often articulated assessments and treatment plans without a prompt. In a few physician only studies, medicine trainees were not measured using the OMP, rather the opposite occurred where trainees rated preceptors and did self-ratings (Eckstrom et al., 2006; Furney et al., 2001).

The findings also showed that mean preceptor self-efficacy and use of the OMP teaching skills scores improved but were not statistically significant. This may reflect the small sample size or that the majority of preceptors felt confident throughout the intervention due to many having extensive NP and precepting experience. Similarly, preceptor self-efficacy scores did not change significantly in studies by Eckstrom et al., (2006) or in Miura et al. (2020) at one month. Miura et al. (2020) measured self-efficacy again and saw more improvement at four months. The short duration of both studies could explain the similar results. It is possible that self-efficacy would have reached significance with more time and experience. Similarly, time constraints were also reported as perceived barrier to precepting in other studies (Fincham et al., 2019; Gatewood et al, 2020). The majority of preceptors in the project found the OMP and RIME useful and intend to continue, similar to Fincham et al.

Some of the survey responses from trainees could be useful in designing future precepting projects. First, the RIME scores did not change rapidly and one trainee felt scores did not need to be reviewed on a weekly basis. Weekly RIME scores may have been too often to

assess, but it kept improvement at the forefront of weekly precepted experiences. Scores varied based on preceptor interpretation, reinforcing the subjective nature of the evaluations according to another trainee. Further education with preceptors may be needed to clarify and reinforce standardized RIME scoring. Preceptors most likely used the OMP with all the trainees but this model was not emphasized by the preceptors to the trainees in the same way as RIME because the RIME framework calls for naming the level R, I, M, or E. Emphasizing the name of the OMP model is not necessary to its successful implementation of the microskills, unlike the RIME.

This project supports the literature in the use of the OMP and RIME framework to measure trainee critical decision making in a primary care NP residency program. This project also provides a model or example for standardizing precepting across one institution for both the preceptor and the trainees to optimize learning and improve preceptor satisfaction and longevity.

### **Clinical Implications for Research**

Many factors have led to an increased focus on precepting. The Department of Veterans Affairs, California, and many other states have passed and implemented full practice authority laws for NPs (Brom et al., 2018; Department of Veterans Affairs, 2016). Safety net healthcare settings employ NPs to serve complex patients (Feyereisen & Puro, 2020; Frazee et al., 2020). Residencies for new NPs are in demand, increasing preceptor demand (Delaney et al., 2019). The use of the OMP and RIME via a standardized preceptor workshop could possibly help new preceptors reach self-efficacy sooner. Precepting lacks standardization yet diagnostic acumen develops in the clinical setting and needs more study (Logan et al., 2015). More information is needed to understand the effects of preceptor interventions on trainees' diagnostic reasoning based on practice settings or specialty.

The findings provide information on how precepting impacts NP trainee diagnostic reasoning and not just the impact on preceptors. This project also highlights the need for institutional standards for precepting and broader implementation across large organizations (e.g., 64 VA NP residency programs).

### **Limitations**

This was a QI project and by design cannot prove causation. Though RIME Scores pre- and post-intervention were statistically significant, demonstrating improved diagnostic reasonings skills, this cannot be attributed solely to the intervention as some improvement would likely occur with time and experience. The subjective nature of the preceptor RIME scoring can potentially reflect preceptor bias that may explain some of our findings. The improved RIME scores could be influenced based on prior exposure or increased precepted time. The preceptor and trainee program surveys had not been tested which pose a threat to internal validity.

### **CONCLUSION**

The use of the OMP case presentation model improved precepting standardization at one VA location and showed significant improvement in diagnostic reasoning skills measured in the NP trainees by the RIME framework. This RIME self-scoring and scoring done by preceptors provided a foundation for initiating discussions about progress and improvement during the residency program. A future VA multi-site evaluation in a larger cohort of NP preceptors and trainees is needed to validate findings.

## APPENDICES

## **Appendix A: Data Collection Time Line**

### **Evaluation of Trainees: Current State [11 weeks]**

#### **Weeks -1 to -11 [Pre-Intervention]**

11 preceptors evaluated trainee's **baseline** RIME scores each week

Evaluated trends and overall score

Inter-rater reliability checks

### **Evaluation of Trainees: Post-Intervention [12 weeks]**

#### **Weeks 1-6 [PDSA 1]**

11 preceptors started using the OMP and evaluated RIME scores each week

Evaluated trends and overall score

#### **Weeks 7-12 [PDSA 2]**

11 preceptors started using the OMP and evaluated RIME scores each week

Evaluated trends and overall score

### **Program Evaluation [Week 12]**

Microsoft Forms **survey** developed by project director for preceptor and trainees

Preceptor and Trainee **Demographic** Information

Preceptor Use of the Teaching Skills, Preceptor Self-Efficacy scores

## Appendix B: Performance Outcomes Metrics

<b>Metric</b>	<b>Organizational Definition</b>	<b>Collection Source</b>
Use of the Teaching Skills	OMP and RIME preceptor knowledge as measured by the “Use of the Teaching Skills,” validated questionnaire (Gatewood et al., 2020).	The Project Director will administer the survey and collate the data.
Preceptor self-efficacy score	The preceptors’ self-evaluation scores of confidence in precepting using the NP Self-Efficacy Questionnaire and will assess intention to continue precepting (Miura et al., 2020).	The Project Director will administer the questionnaire and collate the data.
Trainee diagnostic reasoning score	Difference in trainee RIME level score before and after the intervention as measured by the preceptor (Pangaro, 1999).	Preceptor will assess the RIME level. The Project Director will calculate score change.



**Appendix C: Preceptor Demographic Form**

Age [Years] \_\_\_\_\_

Gender [ ] Male, [ ] Female

Race /Ethnicity (check all that apply)

[ ] White

[ ] Hispanic

[ ] African American

[ ] Asian / Pacific Islander

[ ] Other \_\_\_\_\_

Education [Highest Level]

[ ] MSN

[ ] DNP

Years NP Experience \_\_\_\_\_

Work Status [ ] Full-time, [ ] Part-time

Preceptor Experience [Years] \_\_\_\_\_

Previous Preceptor Training [ ] No, [ ] Yes

University Affiliation: Professor or Preceptor [ ] No, [ ] Yes

Clinic Setting(s): \_\_\_\_\_

**Appendix D: Trainee Evaluation Form**

Age [Years] \_\_\_\_\_

Gender [ ] Male, [ ] Female

Race /Ethnicity (check all that apply)

[ ] White

[ ] Hispanic

[ ] African American

[ ] Asian / Pacific Islander

[ ] Other \_\_\_\_\_

RN Experience [years] \_\_\_\_\_

Education

[ ] MSN

[ ] DNP

## Appendix E: Precepting Program Evaluation

### 1. Use of the Teaching Skills

What factors influence your ability to precept a student?

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Time burden of teaching (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Productivity demands (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of administration support (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of teaching training (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient program support (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of space (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please rate how often you:

	Every time (100%) (1)	Usually (~90%) (2)	Frequently (~70%) (3)	Half of the time (50%) (4)	Occasionally (30%) (5)	Rarely (10%) (6)	Never (0%) (7)
Get a student's diagnosis, work-up or input prior to your explanation (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Involve the student in the decision-making process (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asses the students reasoning behind his / her decision (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluate the students' knowledge of medical skills and analytic fact (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teach a general rule for future use (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Give positive feedback on correct actions (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explain to the student why s/he was correct (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offer suggestions for improvement (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Give feedback frequently (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivate the student to complete outside learning (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall teaching effectiveness (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Gatewood, E., De Gagne, J. C., Kuo, A. C., & O’Sullivan, P. (2020). The One-Minute Preceptor: Evaluation of a clinical teaching tool training for nurse practitioner preceptors. *Journal for Nurse Practitioners*, 16(6), 466. <https://doi.org/10.1016/j.nurpra.2020.03.016>

2. NP Preceptor Self-Efficacy Questionnaire

Please circle the most appropriate response for each item below using the following scale:

- 1 = Completely lacking in confidence
- 2 = Mostly lacking in confidence
- 3 = Slightly lacking in confidence
- 4 = Slightly confident
- 5 = Mostly confident
- 6 = Completely confident

HOW CONFIDENT ARE YOU THAT:

1	You have the ability to carry out your role as preceptor.	1	2	3	4	5	6
2	You have the necessary knowledge to work with a nurse practitioner student.	1	2	3	4	5	6
3	You have the necessary knowledge of the preceptor role to perform effectively as a preceptor.	1	2	3	4	5	6
4	You can maintain effective communication with students.	1	2	3	4	5	6
5	You can balance the multiple demands of students and your workload simultaneously.	1	2	3	4	5	6
6	You can assume a facilitative rather than a directive role with students.	1	2	3	4	5	6
7	You can effectively assess students' learning needs.	1	2	3	4	5	6
8	You can adapt your clinical teaching to meet a student's learning style.	1	2	3	4	5	6
9	You can select learning experiences that are congruent with course objectives.	1	2	3	4	5	6
10	You can promote the integration of skills learned in the classroom to the practice setting.	1	2	3	4	5	6
11	You can assist students to develop problem-solving skills.	1	2	3	4	5	6

12	You can assist students to develop critical thinking skills.	1	2	3	4	5	6
13	You can challenge students to use critical thinking skills.	1	2	3	4	5	6
14	You can deal effectively with unexpected events or unforeseen problems.	1	2	3	4	5	6
15	You can deal effectively with challenging students.	1	2	3	4	5	6
16	You can deal effectively with conflict in the student/preceptor relationship.	1	2	3	4	5	6
17	You can support student ideas even when they are incongruent with your own.	1	2	3	4	5	6
18	You can provide verbal feedback to students about their performance.	1	2	3	4	5	6
19	You can provide a written final evaluation of student performance.	1	2	3	4	5	6
20	You can provide constructive feedback.	1	2	3	4	5	6
21	Rate your overall level of confidence in precepting a nurse practitioner student.	1	2	3	4	5	6

Miura et al., 2020: Adapted with permission from Parsons (2007). Improving preceptor self-efficacy using an online educational program. *International Journal of Nursing Education Scholarship*, 4(1). <https://doi: 10.2202/1548-923X.1339>

### 3. Resident Post-Intervention Evaluation

1. In the last two months, one or more of my preceptors have educated me about and then utilized the Reporter-Interpreter-Manager-Educator (RIME) framework during precepting.
  - one preceptor
  - two preceptors
  - three preceptors
  - four preceptors
  - five or more preceptors
  - none did
  
2. In the last two months, one or more of my preceptors have educated me about and then utilized the One-Minute Preceptor (OMP) model during precepting.
  - one preceptor
  - two preceptors
  - three preceptors
  - four preceptors
  - five or more preceptors
  - none did
  
3. Use of the RIME framework with my preceptor clarified what we needed to work on to advance my clinical skills.
  - Always
  - Almost always
  - About half the time
  - Almost never
  - Never
  
4. When used, the OMP microskills #1 - make a commitment to a diagnosis, differential diagnoses, or a work-up, and #2 - state the rationale for #1, facilitated the development of my diagnostic reasoning skills compared with previous precepting techniques I have experienced.
  - Always
  - Almost always
  - About half the time
  - Almost never
  - Never



5. Preceptors who explicitly used the RIME and OMP in precepted experiences enhanced my clinical learning.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Use of the RIME and OMP together results in more effective precepting.
- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

6. Optional comments about the RIME, OMP, or precepting:

## Appendix F: Table of Evidence

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Aagaard, E., Teherani, A., &amp; Irby, D. M. (2004). Effectiveness of the one-minute preceptor model for diagnosing the patient and the learner: proof of concept. <i>Academic Medicine: Journal of the Association of American Medical Colleges</i>, 79(1), 42–49. <a href="https://doi.org/10.1097/00001888-200401000-00010">https://doi.org/10.1097/00001888-200401000-00010</a></p>	<p>Compare OMP to usual precepting</p> <p>Ability to correctly diagnose</p> <p>Ability and confidence to rate students</p> <p>Precepting satisfaction</p>	<p><u>Sample size:</u> 116 preceptors</p> <p>55% IM 28% FM 4% Peds 3% Psychiatry 9% other</p> <p>Experience precepting 0-25 yrs. (avg 5.4 yrs.)</p> <p><u>Setting:</u> 7 universities: UCSF Harvard, UNC USC U of Wisconsin</p>	<p>Within group experimental design: 2 videos of standardized case presentations in 4 arrangements of teaching model order and case order.</p> <p>Open-ended Effect of Teaching Model questionnaires were given 5-point Likert scale):</p> <ol style="list-style-type: none"> <li>1. After case presentation – rate student</li> <li>2. After inquiry and discussion – rate teaching</li> <li>3. Asked about OMP exposure and if yes, list steps</li> </ol> <p>Repeated-measures ANOVA used to detect differences between traditional model and OMP on preceptors’ ratings accuracy and confidence of rating students’ skills, efficiency and effectiveness of each model</p>	<ul style="list-style-type: none"> <li>• 35% OMP familiar</li> <li>• 16% had used OMP: 7% able to identify 3 or more steps; 0% retrieved 5 steps</li> </ul> <p>Repeated measures ANOVA used to study variance in preceptor scores.</p> <ul style="list-style-type: none"> <li>• Able to correctly diagnose with OMP p=.02</li> <li>• Ability to rate learner: no significant dif.</li> <li>• Efficiency and effectiveness: OMP greater (p=.00)</li> <li>• No sig difference in rating based on experience except clinical reasoning higher for OMP exposed preceptors (p=.01)</li> </ul>	<ul style="list-style-type: none"> <li>• Preceptors more likely to diagnose the patient via the trainee OMP presentation video</li> <li>• Preceptors rated the OMP more effective than traditional precepting and more efficient. Hypothetical based on videos.</li> <li>• More scientifically rigorous than many other OMP studies. OMP was helpful in diagnosing the learner and the patient.</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Not an RCT</li> <li>• Intervention was simulation video exercise; findings may not be reproducible in clinical setting.</li> <li>• Some subjects had prior familiarity with the OMP, confounding results.</li> </ul> <p><u>Implications:</u> Video simulation only Physicians only Outcomes objective</p>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Cohen, D. A., &amp; Truglio, J. (2017). Fitting It All In: An Interactive Workshop for Clinician-Educators to Improve Medical Education in the Ambulatory Setting. <i>MedEd PORTAL: the journal of teaching and learning resources</i>, 13, 10611. <a href="https://doi.org/10.15766/mep.2017.13.374-8265.10611">https://doi.org/10.15766/mep.2017.13.374-8265.10611</a></p>	<p>To help medical educators improve teaching in an ambulatory care.</p>	<p><u>Sample size:</u> 98 evaluations <u>Disciplines:</u> educators, med students, nurses, NPs, physicians, PAs, trainees, veterinarians <u>Specialties:</u> anesthesiology dermatology emergency family gynecology IM neurology obstetrics ophthalmology optometry otolaryngology pathology pediatrics plastic surgery psychiatry radiology urology surgery <u>Setting:</u> 4 large centers Boston = 2 New York = 4</p>	<p>QI project: 90-minute workshop presented 5 times:</p> <ul style="list-style-type: none"> <li>• didactic of concepts</li> <li>• guided reflection</li> <li>• discussion of individual experiences</li> <li>• analysis of 3 educational videos</li> <li>• role-play</li> </ul> <p>Designed for a single presenter with 4 - 40 participants</p> <p>Post-session Relevance to Practice survey: 4-point Likert scale Poor-Very good/Excellent Assessed quality of presenter, depth of presentation, amount of new information, relevance, and use of audiovisuals</p>	<p>Relevance to Practice ratings 4-point Likert scale: Overall rating: N=92 Poor = 0 Fair = 1 Good = 8 Very good/Excellent = 83</p> <ol style="list-style-type: none"> <li>1. Beth Israel Deaconess MC Medical Educators: N =8 (weighted avg. 3.88)</li> <li>2. Beth Israel Deaconess MC Endocrine Grand Rounds: N =7 (weighted avg. 4)</li> <li>3. Harvard Medical School Precepting Courses: N = 77 (weighted avg. 3.89)</li> </ol>	<p>Preceptor training workshop designed then modified based on feedback</p> <ul style="list-style-type: none"> <li>• Well-received</li> <li>• Training resources and evaluation form provided</li> </ul> <p>Descriptive of a training workshop with post – training evaluation.</p> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Not designed as a study or formal QI project but modification occurred based on evaluation feedback</li> <li>• Limited data collection <ul style="list-style-type: none"> <li>- No pre-test survey</li> <li>- Recall not tested</li> <li>- Did not measure if it improved the ability to teach</li> <li>- Not tested with trainees</li> </ul> </li> </ul> <p><u>Implications:</u> Didactic, video and role-play. Many disciplines studied including NPs Subjective rating</p>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Eckstrom, E., Homer, L., &amp; Bowen, J. L. (2006). Measuring preceptor faculty development workshop. <i>Journal of General Internal Medicine</i>, 21(5), 410–414. <a href="https://doi.org/10.1111/j.1525-1497.2006.00418.x">https://doi.org/10.1111/j.1525-1497.2006.00418.x</a></p>	<p>Develop a questionnaire to measure faculty self-assessment and resident assessment of faculty on the effectiveness of an enhanced OMP workshop</p>	<p><u>Sample size:</u> 68 internal medicine ambulatory preceptors (44 control, 24 intervention)  22 completed pre and post questionnaires. Residents completed 94 pre-intervention and 58 post-intervention questionnaires on participant faculty <u>Setting:</u> University VA 2 community clinics</p>	<p>QI study: Convenience sample - IM preceptors invited Nonparticipants were control group. Nonrandomized controlled pre-post study design One workshop offered 3 times every 6 months <u>Intervention:</u> Enhanced OMP workshop (Described in another article) <u>Measure:</u> Developed and tested a Faculty Self-Assessment Survey - Likert scale (1-4) - that correlated with OMP (tested 3 groups – participants (P), control (C), and investigator (G) faculty).  Resident questionnaires collected every 6 months x 4.</p>	<p><u>Demographics:</u> Similar between preceptor groups  Analysis significance level of 0.05, 2-tailed tests. <u>Faculty self-assessment survey:</u> Significant improvement in 3 of 5 OMP microskills. Correlated with OMP; Cronbach’s alpha for internal consistency in distinguishing trained and untrained faculty (tested 3 groups – P, C, and G faculty). Pre-post faculty self-rating compared using paired <i>t</i> tests. Did not meet statistical significance: Improvement noted in participant group; decline noted in control group. <u>Resident assessment:</u> 494 assessments (444 without missing data); 220 on controls; 58 post surveys on participants. Improvements in 4/5 microskills were not significant in 2-tailed <i>t</i> tests.</p>	<p><u>Faculty self-assessment:</u></p> <ul style="list-style-type: none"> <li>• Measures faculty self-assessment not just satisfaction</li> <li>• Internal consistency</li> </ul> <p><u>Resident assessment:</u></p> <ul style="list-style-type: none"> <li>• Rated preceptors high pre and post.</li> <li>• Seems to work for residents measuring preceptor behaviors.</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Not an RCT</li> <li>• Small sample; not tested for generalizability</li> <li>• Unable to randomize</li> <li>• Cross contamination</li> <li>• Unable to measure control group</li> <li>• Prior OMP training not measured</li> <li>• Self-assessment bias</li> <li>• Residents are untrained observers</li> </ul> <p><u>Implications:</u></p> <ul style="list-style-type: none"> <li>• Outcomes assessment complicated by complex teaching environment</li> <li>• Instructional competence difficult to measure.</li> <li>• Self-efficacy leads to behavior change in preceptor</li> <li>• Didactic</li> <li>• Physicians</li> <li>• Subjective results</li> </ul>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Fincham, S. J., Smith, T., &amp; Purath, J. (2019). Implementation of an educational program to improve precepting skills. <i>Journal of the American Association of Nurse Practitioners</i>, Online, November 15, 2019. <a href="https://doi.org/10.1097/JXX.0000000000000326">https://doi.org/10.1097/JXX.0000000000000326</a></p>	<p>To identify needs of preceptors, implement and evaluate a preceptor training program.</p>	<p><u>Sample size:</u>          · Needs assessment: 341, 84 respondents (24%).</p> <p>Disciplines: APRNs, PAs, physicians.</p> <p>Intervention: 58 Health care providers          · 53% APRNs          · 23% Physicians          · 19% PAs          · 3% Pharm Ds          · 2% Dietitians</p> <p><u>Setting:</u>          9 outpatient primary care clinics.</p>	<p>QI project: Needs assessment sent 3 times over 3 weeks  <u>Intervention:</u> 10 trainings in RIME framework and OMP, providing feedback, and communicating with the university over 12 months in 3 phases –          · one-hour training in person training in FQHC,          · then in other clinics,          · then as online tool still in development.</p> <p><u>Measure:</u> Post-survey immediately after training (Likert scale, multiple choice, and open-ended questions)</p> <ul style="list-style-type: none"> <li>• Descriptive statistics used to analyze content</li> <li>• Data collected in Qualtrics and exported into Excel.</li> <li>• Content analysis used for open-ended answers</li> </ul>	<p><u>Needs assessment:</u>          Barriers to precepting -          · 82% reported time constraint          · 93% no decreased workload          · 75% longer workdays when precepting          · 68% value training          · 86% no prior RIME training          · 80% no prior OMP training.</p> <ul style="list-style-type: none"> <li>• Post training survey re-reported preceptor perceptions: 96 to 100% positive - qualitative questions not reported further.</li> <li>• 72% said they would use in future.</li> </ul>	<p>Known tools used – RIME and OMP.          The online tool may be able to be used or tested in current project, if it is finished.</p> <p>This was a QI not a experimental study, so it has limited reliability and reproducibility.</p> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Lacks internal and external validity.</li> <li>• Preceptor perceptions measured, not skills acquired.</li> <li>• No comparison group.</li> </ul> <p><u>Implications:</u>          Didactic, online tool in development          APRNs, PAs, physicians          Subjective measures</p>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Furney, S. L., Orsini, A. N., Orsetti, K. E., Stern, D. T., Gruppen, L. D., &amp; Irby, D. M. (2001). Teaching the one-minute preceptor. A randomized controlled trial. <i>Journal of General Internal Medicine</i>, 16(9), 620–624.  <a href="https://doi.org/10.1046/j.1525-1497.2001.016009620.x">https://doi.org/10.1046/j.1525-1497.2001.016009620.x</a></p>	<p>To evaluate the effect of OMP on residents' teaching skills.</p>	<p><u>Sample:</u>  57 inpatient IM residents U of MI and VA  Randomized to intervention = 28 or control = 29    Residents excluded if not teaching</p>	<ul style="list-style-type: none"> <li>• Randomized controlled trial: 1-hour teaching session incorporating lecture, group discussion, and role-play</li> <li>• Lunch time, mid-month</li> <li>• OMP 15-minute lecture, 20-minute role-play, 15-minute discussion</li> <li>• Residents asked to state teaching goals</li> <li>• OMP pocket card provided</li> <li>• Primary outcome measure: Student rating of preceptor at end of rotation</li> <li>• Secondary outcome measure: OMP use pre- and post-intervention and usefulness of OMP at end of rotation</li> <li>• 14 item questionnaire pretested for clarity with students and residents</li> </ul>	<p><u>Resident self-report:</u>  Domains significant (<math>p &lt; .01</math>): get a commitment, probe, feedback</p> <p><u>Student ratings:</u></p> <ul style="list-style-type: none"> <li>• Domains significant (<math>p &lt; .05</math>): commitment, probe, feedback suggestions and frequency, overall – motivate to read</li> <li>• Intervention group significant changes in all behaviors (<math>P &lt; .05</math>).</li> <li>• 87% of residents rated the intervention as “useful or very useful” (1–5 point scale, mean of 4.28 (SD 0.65)).</li> <li>• Student ratings of teacher showed improvements in all skills except “Teaching General Rules.” (<math>p = .10</math>)</li> <li>• Students of intervention group reported increased motivation to read (mean difference 0.35; <math>p &lt; 0.05</math>).</li> <li>• Overall teaching effectiveness not significantly different (<math>&lt; 0.01</math>)</li> </ul>	<p>Feedback improved for both resident self-evaluation and for students</p> <p>OMP Microskill Teach general rules was not improved and may be related to residents limited knowledge base</p> <p><u>Limitations:</u>  Unblinded  Generalizability: Single institution</p> <p><u>Implications:</u>  Lecture, discussion, role-play  IM residents  Subjective results</p>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Gatewood, E., De Gagne, J. C., Kuo, A. C., &amp; O’Sullivan, P. (2020). The One-Minute Preceptor: Evaluation of a clinical teaching tool training for nurse practitioner preceptors. <i>Journal for Nurse Practitioners</i>, 16(6), 466. <a href="https://doi.org/10.1016/j.nurpra.2020.03.016">https://doi.org/10.1016/j.nurpra.2020.03.016</a></p>	<p>Evaluate an OMP training program on perceived barriers to precepting</p>	<p><u>Sample size:</u> 57 outpatient providers (24 first session, 33 second session)</p> <p><u>Disciplines:</u> NPs MDs DOs PsyD</p> <p><u>Setting:</u> community clinic sites</p>	<p>QI Study: Educational intervention teaching OMP, RIME, SNAPPS</p> <p>Two 2-hour sessions attended by 2 different groups – didactic, video, role-play</p> <p><u>Intervention:</u> “Time Efficient Clinical Teaching” session</p> <p><u>Measures:</u> Pre and post surveys: Barriers to clinical teaching 7-point Likert scale survey; “Use of the Teaching Skills” 14 question validated survey. Overall satisfaction evaluated post session on a 5-point Likert scale. Data collected via Qualtrics. Analysis was in IBM SPSS 24 software by a Mann-Whitney <i>U</i> test with a significance of <math>P &lt; .05</math></p>	<p>Statistically significant increase:</p> <ul style="list-style-type: none"> <li>• intent to use microskills 4 (reinforce what was done well) and 5 (correct mistakes) (<math>U = 308.5, P &lt; .05</math>)</li> <li>• overall motivation to use OMP (<math>U = 309.5, P &lt; .05</math>)</li> </ul> <p>Barriers to teaching changed post session for lack of space (<math>P &lt; 0.05</math>)</p> <p>Time burden perception was not reduced by the OMP (median 6 pre and post).</p> <p>No difference in OMP use by profession.</p>	<p>Intent to use microskills 4 and 5 consistent with previous literature. Actual use of the OMP in the clinical setting was not evaluated. Not an RCT No comparison group</p> <p>OMP can be taught to community clinicians who teach NP students.</p> <p>Recommendations for future study:</p> <ul style="list-style-type: none"> <li>o preceptor behavior change</li> <li>o student perception of teaching skills post OMP</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Convenience sample</li> <li>• Only captured 51% who completed both pre and post surveys</li> <li>• Self-reported</li> </ul> <p><u>Implications:</u> Didactic, video, role-play NPs, physicians, psychologist Subjective measurement</p>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Lyons, K., McLaughlin, J. E., Wolcott, M. D., Grandy, R., &amp; Williams, C. R. (2019). How Pharmacist Preceptors Foster Students' Therapeutic Reasoning Using the One-Minute Preceptor Method. <i>American Journal of Pharmaceutical Education</i>, 83(8), 7212. <a href="https://doi.org/10.5688/ajpe7212">https://doi.org/10.5688/ajpe7212</a></p>	<p>To compare whether preceptors trained in the OMP versus preceptors not trained in the OMP use OMP and whether their students demonstrate more frequent expression of therapeutic reasoning processes during case presentations</p>	<p><u>Sample:</u> Four OMP preceptors</p> <p><u>Control:</u> 3 untrained preceptors</p> <p>27 Pharm students (4<sup>th</sup> yr.)</p> <p>statistical analysis included a sample size of 17 in the control group and 25 in the OMP group</p>	<p>Pilot quasi-experimental study.</p> <p><u>Intervention:</u></p> <ul style="list-style-type: none"> <li>• 4 preceptors attended a two-hour OMP training.</li> <li>• Preceptors collected audio recordings of their students presenting patient cases.</li> <li>• Recordings coded for preceptors' use of OMP and students' expression of therapeutic reasoning.</li> <li>• Intervention group reminded by email to continue using OMP in year two.</li> <li>• Preceptors in the control group to conduct their usual and customary case presentation review with their students.</li> <li>• Analyzed data at level of observations (case presentations), testing for differences in code frequency and occurrence between the OMP and control group</li> </ul>	<p>42 audio recordings from 27 students presenting a patient case to one of 7 preceptors (25 OMP and 17 non-OMP cases)</p> <p>coding interrater reliability, agreement 81.3%, kappa 0.63, = substantial</p> <p><u>Preceptors Frequency:</u></p> <p>Get a commitment:</p> <p style="padding-left: 40px;"><u>Mean (SD)</u></p> <p style="padding-left: 40px;">OMP 4.0 (2.7)</p> <p style="padding-left: 40px;">Non 2.4 (2.0)</p> <p style="padding-left: 40px;"><i>t</i> test 2.09 (p=.03)</p> <p>Probe for supporting evidence -reasoning:</p> <p style="padding-left: 40px;"><u>Mean (SD)</u></p> <p style="padding-left: 40px;">OMP 1.5 (1.0)</p> <p style="padding-left: 40px;">Non 0.8 (1.0)</p> <p style="padding-left: 40px;"><i>t</i> test 2.18 (p=.03)</p> <p>Reinforce what was done well:</p> <p style="padding-left: 40px;"><u>Mean (SD)</u></p> <p style="padding-left: 40px;">OMP 1.7 (0.9)</p> <p style="padding-left: 40px;">Non 0.6 (0.7)</p> <p style="padding-left: 40px;"><i>t</i> test 4.56 (p&lt;.001)</p> <p><u>Students:</u></p> <p>non-OMP group more frequently articulated assessments and treatment plans without prompt(p=.001)</p>	<ul style="list-style-type: none"> <li>• First study that observed preceptors in practice following OMP training.</li> <li>• Implementing OMP workshops for preceptors to elicit students' therapeutic reasoning needs further testing; a longitudinal study of effects of OMP on students over time.</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Small sample size: Unable to calculate a multilevel model (between-student and between-preceptor differences).</li> <li>• Nonrandom sample assigned by location.</li> <li>• Assessed students' therapeutic reasoning at only one time point.</li> <li>• Hawthorne effect may have changed preceptors' and students' natural behaviors.</li> <li>• Unknown if OMP training was validated</li> </ul> <p><u>Implications:</u></p> <p>Pharm preceptors and students. Objective results. Measurements of OMP may not yield intended results but plotted over time may prove useful.</p>



Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
<p>Miura, M., Daub, K., &amp; Hensley, P. (2020). The one-minute preceptor model for nurse practitioners: A pilot study of a preceptor training program. <i>Journal of the American Association of Nurse Practitioners</i>, 32(12), 809–816. <a href="https://doi.org/10.1097/JXX.0000000000000300">https://doi.org/10.1097/JXX.0000000000000300</a></p>	<p>To evaluate OMP preceptor training program impact on NPs' self-efficacy as a clinical educator and facilitate their decision to become a preceptor 2 aims: 1) to develop OMP training program 2) to evaluate the program.</p>	<p><u>Sample size:</u> 9 NP participants (29 recruited) (8 completed pre-assessment)</p> <p><u>Demographics:</u> N=8 All female Age 34-66 (avg, 48.9) All experienced preceptors Range &lt;1-&gt;10 years NP experience: 1-3 to &gt;20 yrs. 75% (n=6) formal preceptor training; NP specific training n=3</p> <p><u>Setting:</u> Federally qualified health center rural Hawaii</p>	<p>QI study: 1.5-hour training lecture describing the OMP model and application to teaching; role-play; and discussion</p> <ul style="list-style-type: none"> <li>• Demographic Questionnaire</li> <li>• <u>3 surveys:</u> <ul style="list-style-type: none"> <li>○ Pretest</li> <li>○ Posttest</li> <li>○ 3-month follow-up:           <ul style="list-style-type: none"> <li>▪ <u>3 instruments:</u> <ul style="list-style-type: none"> <li>▪ Willingness Questionnaire,</li> <li>▪ NP Preceptor Self-Efficacy Questionnaire: 21 Likert scale questions based on Parson's validated tool</li> <li>▪ Course Evaluation: Likert scale and qualitative comment</li> </ul> </li> </ul> </li> </ul> </li> </ul>	<p>Willingness Pretest N=8: 6 scheduled to precept 1 somewhat likely 1 unlikely Posttest N=8: 6 scheduled to precept 1 slightly increased likelihood Program positive effect on willingness n=5 4 agreed; 1 neutral Willingness follow-up: N=7 4/4 precepted &amp; used OMP 5/5 were likely to precept in next 6 mos. 6/7 agreed that program had positive influence on future precepting Self-efficacy assessment: 8/18 measures improved from pretest to follow-up</p>	<p>NP preceptor training program improved participants' self-efficacy as NP preceptors</p> <p>Self-efficacy changed more at 4 months suggesting practicing the OMP increased confidence</p> <p>Feasible but scheduling conflicts</p> <p>More research for NP preceptor training to increase EBP</p> <p><u>Limitations:</u> Small sample n=9 Single site Convenience sample</p> <p><u>Implications:</u> Lecture, role-play, discussion NPs Subjective results</p>

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
Perryman K. W. (2022). Nurse practitioner preceptor education to increase role preparedness. <i>Journal of the American Association of Nurse Practitioners</i> , 10.1097/JXX.0000000000000702. Advance online publication. <a href="https://doi.org/10.1097/JXX.0000000000000702">https://doi.org/10.1097/JXX.0000000000000702</a>	Assess whether preceptor role education increase role preparedness	<u>Sample size:</u> Obtained from one College of Nursing FNP preceptor list 3,087 emailed; 149 excluded for not completing post-test; 55 preceptors, white women 40-49 years, 5-10 years of experience. Precepting 11-15 years.	QI study <ul style="list-style-type: none"> <li>• Pre- post-test design with modified Clinical Supervision Self-Assessment Tool-Skills (Likert scale 20-100 pts.)</li> <li>• Intervention: Web-based, asynchronous education (self-paced)               <ul style="list-style-type: none"> <li>- One Minute Preceptor</li> <li>- Ask, Tell, Ask</li> <li>- Faculty Expectations of Preceptors Checklist</li> </ul> </li> </ul>	Preceptor preparedness increased post-intervention (p=.001) (paired <i>t</i> -test)  <u>Mean score (SD)</u> Pre-test 89.58 (15.82) Post-test 92.96 (16.43)	Addressed preceptor preparedness with a validated tool pre and post-education intervention. It did not assess the effect on preceptors and trainees in the clinical setting.  <u>Limitations:</u> QI study Small sample Attrition Did not assess the effect on preceptors and trainees in the clinical setting  <u>Implications:</u> Adds to the literature on NP, specifically FNP, preceptor role development and preparedness

Author, Year	Purpose	Sample & Setting	Methods, Design, Interventions, Measures	Results	Discussion, Interpretation, Limitation of Findings
Servey, J., & Wyrick, K. (2018). Teaching clinical precepting: A faculty development lecture using role-play. <i>MedEdPORTAL: The Journal of Teaching and Learning Resources</i> , 14, 10718. <a href="https://doi.org/10.15766/mep.2018.14.374-8265.10718">https://doi.org/10.15766/mep.2018.14.374-8265.10718</a>	Faculty development in OMP based in Kolb's experiential learning theory	<p><u>Sample Size:</u> 392 98 residents 291 physicians</p> <p><u>Specialties:</u> Family IM Pediatrics Ortho ENT Anesthesia Emergency Psychiatry Radiology Dermatology</p> <p><u>Setting:</u> 16 teaching hospitals in Military Health System</p>	<ul style="list-style-type: none"> <li>• QI project: Convenience sample. Open enrollment from 16 military teaching hospitals yielded participants from medicine, medical and surgical specialties</li> <li>• Lecture for 2-62 participants</li> <li>• Offered 26 dates at 16 locations</li> <li>• <u>Intervention:</u> Lecture sign-up Lecture room set-up Didactic presentation (30 min.) on the One-Minute Preceptor microskills Facilitated discussion Role-play (10 min.) Debriefing</li> </ul>	<p>97% participants reported directly useful 96% reported it was organized</p> <p>Qualitative feedback: Equally divided between liking and disliking role-play.</p>	<p>A description of a faculty precepting development educational lecture. Materials to conduct the lecture are in an appendix for download (retrieved). Kolb's experiential learning theory used to design the curriculum; included didactics, discussion and role-play. Role-play in larger groups &gt; 20, challenging. Materials provided have been revised based on observations and evaluations of 26 workshops.</p> <p><u>Limitations:</u> Microskills retention not measured. Not a study. No comparison group. Evaluation was non-specific (part of larger program evaluation)</p> <p><u>Implications:</u> Lecture, role-play, debrief Physicians only Subjective results</p>

Note. ANOVA = analysis of variance; APRN = advanced practice registered nurse; DO/MD/ = physician; FNP = family nurse practitioner; NP = nurse practitioner; OMP = One-Minute Preceptor; Pharm D = pharmacist; PA = physician assistant; PsyD = psychologist; RIME = Reporter-Interpreter-Manager-Educator.

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