# What are the Effects of Different Team-based Primary Care Structures on the Quadruple Aim of Care? A Rapid Review

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# PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted healthcare topics of importance to clinicians, managers, and policymakers as they work to improve the health and healthcare of Veterans. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The program comprises three ESP Centers across the US and a Coordinating Center located in Portland, Oregon. Center Directors are VA clinicians and recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Center Program and Cochrane. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, and interface with stakeholders. To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee composed of health system leadership and researchers. The program solicits nominations for review topics several times a year via the program website.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, Deputy Director, ESP Coordinating Center at Nicole.Floyd@va.gov.

# ACKNOWLEDGMENTS

This topic was developed in response to a nomination by Idamay Curtis, BA, Karin Nelson, MD, MSHS, and Greg Stewart, PhD for the purpose of identifying the structure and function of primary care team members to maximize patient and provider outcomes. The scope was further developed with input from the topic nominators (*ie*, Operational Partners), the ESP Coordinating Center, the review team, and the technical expert panel (TEP).

In designing the study questions and methodology at the outset of this report, the ESP consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

The authors gratefully acknowledge the following individuals for their contributions to this project:

## Operational Partners

Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend Technical Expert Panel (TEP) participants; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for dissemination of the report to field and relevant groups.

Idamay Curtis, BA
*Co-Director of the Office of Primary Care Analytics Team*
*VA Puget Sound Health Care System*

Karin Nelson, MD, MSHS
*Director, Primary Care Analytic Team, VHA Office of Primary Care*
*Professor of Medicine, University of Washington*

Greg Stewart, PhD
*Professor of Management and Entrepreneurship*
*University of Iowa, Tippie College of Business*

## Technical Expert Panel (TEP)

To ensure robust, scientifically relevant work, the TEP guides topic refinement; provides input on key questions and eligibility criteria, advising on substantive issues or possibly overlooked areas of research; assures VA relevance; and provides feedback on work in progress. TEP members are listed below:

Lisa Rubenstein, MD, MS
*Professor of Medicine and Public Health, VA Greater Los Angeles and UCLA*
*Senior Natural Scientist, RAND*

Ann-Marie Rosland, MD, MS
*Associate Professor, Internal Medicine, University of Pittsburgh Department of Medicine*
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Sylvia Hysong, PhD
*Associate Professor, Department of Medicine, Baylor College of Medicine*
*Lead Research Health Scientist, VA Medical Center, Houston, Texas*

**Peer Reviewers**

The Coordinating Center sought input from external peer reviewers to review the draft report and provide feedback on the objectives, scope, methods used, perception of bias, and omitted evidence. Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The Coordinating Center and the ESP Center work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

# EXECUTIVE SUMMARY

## INTRODUCTION

Team-based primary care has become a predominant model to provide accessible, high-quality care, and meet the quadruple aims of improving patient experience, population health, the work life of the health care workforce, and reduce costs. VA re-organized primary care delivery via the Patient Aligned Care Teams, which is based on the medical home model. Within the primary care team are smaller units, what Bodenheimer and Liang term "the central subunit" of the team,[1] which has been called the teamlet. The smallest composition of the teamlet is the clinician and medical assistant. Bodenheimer and Liang proposed the teamlet consist of a clinician and 2 health coaches. Other compositions have been proposed. In VA, the teamlet has been defined as a primary care provider (either a physician, a physician's assistant, or a nurse practitioner), a registered nurse (RN), a licensed practical nurse (LPN), and a clerk or medical support assistant. Thus, the model aims to provide 3.0 full-time equivalent (FTE) staff for each PCP FTE, and each teamlet is expected to provide primary care for approximately 1200 Veterans. As VA continually seeks to improve the quality, cost, access, and wellbeing of the health care workforce, the question arises whether other compositions of the teamlet or the larger team might produce improvements in any of these domains. Thus, the Office of Primary Care requested this Rapid Review regarding team composition and outcomes.

## METHODS

This topic was developed in response to a nomination by Idamay Curtis, Co-Director of Primary Care Analytics Team, Dr. Karin Nelson, Director of the Office of Primary Care Analytics Team, and Dr. Greg Stewart, Professor of Management and Entrepreneurship. Key questions were then developed with input from the topic nominator, the ESP coordinating center, the review team, and the technical expert panel (TEP).

The revised Key Question for this rapid review was:

What are the effects of different primary care team structures on care?

### DATA SOURCES AND SEARCHES

We conducted broad searches using terms relating to "patient care team" or "team based" or "primary health care." We searched OVID Medline from inception to 5/29/20.

### STUDY SELECTION

Studies were included if they:

1) Were a comparative study of 2 different primary care team structures (randomized or observational);

2) Were a pre-post or time series study of 2 different structures for the same team – in other words at time point zero a team has 1 structure and then this is changed at a later time to a different structure;

3) Were hypothesis-testing studies of adding a new team member to an established team – for example, adding a nurse practitioner or a pharmacist to an existing team;

4) Were pre-post or time series studies of going from a "no team" structure to a defined "team-based" structure; or

5) Included studies needed to report a triple aim outcome (quality, cost, patient experience) or provider-based outcome (such as burnout).

## DATA ABSTRACTION AND QUALITY ASSESSMENT

Data abstracted included the study design, setting, sample size, team members added or team members studied, outcomes, and data needed for the quality assessment/risk of bias tools. Randomized trials were assessed for quality/risk of bias using the Cochrane Risk of Bias Tool. Observational studies that were longitudinal and had a control group were assessed using the Cochrane Risk of Bias in Observational Studies – Interventions (ROBINS-I). Cross-sectional and pre-post studies were not assessed for risk of bias with a tool since they are by definition at high risk of bias. Modeling studies were not assessed for quality because no standardized tool exists for that purpose.

## DATA SYNTHESIS AND ANALYSIS

We grouped studies into 1 of the 4 categories described above, and within category summarized the evidence narratively. We used the criteria of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) working group to assess the certainty of evidence across studies.

# RESULTS

## RESULTS OF LITERATURE SEARCH

We identified 3,463 potentially relevant citations, of which 214 were included at the abstract screening. From these, a total of 129 abstracts were excluded. A total of 14 publications were identified at full-text review as meeting initial inclusion criteria. This included 5 studies that showed comparative study of team structure A vs structure B, 8 studies that added a provider in context of team-based care, and 1 study that was not a team to team with team roles defined.

## KEY FINDINGS AND STRENGTH OF EVIDENCE

### KQ: What are the effects of different primary care team structures on care?

The evidence on what matters in terms of composition of the teamlet is very sparse, consisting of a few hypothesis-testing studies that address only partial aspects of the question, and modeling studies. The most robust evidence is that adding a dedicated chronic care manager can improve some outcomes for some patients – although in the prior ESP review of nurse-managed protocols

the nurse charged with doing this required prescribing authority, which is not something VA currently has for teamlet RNs. We rated this as moderate certainty evidence based on 1 RCT and 1 longitudinal study with a control group, and augmented this with the results of the 1 high-quality ESP review on nurse-managed protocols. Additional low-certainty evidence, based on a single study each, is that adding NPs as co-managers to a physician teamlet increases access (as measured by the 3rd next available appointment), that re-training medical assistants to perform screening increases screening rates, and that differing patient populations will require differing mixes of team skill FTE in order to deliver high-quality care. See Certainty of Evidence table for details. We did not include as "findings" or rate for certainty of evidence conclusions based on results of single studies that were cross-sectional or pre-post in design; thus, only 6 studies contribute evidence to "findings".

**Table. Certainty of Evidence**

| Intervention or Outcome | Number of studies | Study limitations | Consistency | Directness | Precision | Other factors | Overall Certainty of Evidence |
|---|---|---|---|---|---|---|---|
| Adding NP or other dedicated chronic care manager improves outcomes of some chronic conditions (most notably diabetes, but not hypertension) | 3 | Serious | No serious inconsistency | No serious indirectness | No serious imprecision | Moderate-certainty evidence that nurse-managed protocols result in improvements in multiple outcomes for patients with chronic conditions | Moderate |
| Adding NPs as co-management providers increases access | 1 | Very serious | N/A | No serious indirectness | No serious imprecision | None | Low |
| Retraining medical assistants to screen patients for certain conditions can increase the proportion of patients screened | 1 | No serious limitation | N/A | No serious indirectness | No serious imprecision | None | Low |
| 3.6 to 4.0 FTE of supporting team members are needed for each 1.0 FTE of physician to deliver high-quality comprehensive care; different mixes of skillsets and staffing needed for differing patient populations | 1 | Serious limitations | N/A | No serious indirectness | No serious imprecision | Modeling study (Limitation: modeling study) | Low |

# DISCUSSION

## APPLICABILITY

We found only 1 study in a VA population, and it was about single versus multiple team membership roles, and not about specific team members. We can only speculate as to the applicability of the remaining findings to VA populations. At least 1 of the interventions – nurse-managed protocols requiring prescribing authority – is not currently available within VA.

## RESEARCH GAPS/FUTURE RESEARCH

VA would seem to be ideally placed to provide experimental evidence about how teamlet and team structures can be optimized. Almost every VA of sufficient size organizes their teamlets into larger units (like Red, Green, or Blue teams). This would then allow for controlled comparisons of differing team and teamlet structures, with other contextual features being internally controlled (like senior leadership, incentives, and the EHR). For example, any of the recommended team staffing levels in the model of Meyers for either their "high geriatric" or their "high social needs" models could be implemented in 1 larger team (Red/Blue/Yellow) while the others serve as control. Teamlet structure could be varied (for example, 1 RN for every 2 physician providers) or team structures could be varied (for example, adding the 1.0 FTE substance abuse counselor). Data collection could come directly from the EHR. Detailed information would need to be collected about patients' chronic conditions and social needs, as the model by Meyers consider these important variables when determining optimal team composition. An agreed-upon metric for evaluating performance – presumably based on the triple aim – would facilitate comparisons of results across studies.

## CONCLUSIONS

The evidence for an optimal teamlet or team structure is very sparse. Other than adding a dedicated chronic care manager, there is no evidence above low certainty that any team structure is optimal. Complex patients almost certainly benefit from additional skills (beyond the basic teamlet of provider, medical assistant, and nurse) in the team writ large (such as pharmacist, chronic care manager, *etc*).