

Appendix I. Methods

The following Appendix provides a detailed description of methods used to develop the Atlas of Instruments to Measure Team-based Primary Care.

Conceptual Framework

As a crucial first step in the development of this Atlas, we developed a Conceptual Framework of Team-based Primary Care (see Section 2.2 of the report). The Framework summarizes the core characteristics of a well-functioning primary care team. The purpose of the Conceptual Framework is to serve as:

- A guide for the environmental scan and mapping of existing instruments measuring team characteristics and functioning;
- An organizing framework to enhance the functionality of the interactive Atlas; and
- A road map to identify gaps and future directions for the development of new instruments and methods to observe and assess team-based primary care.

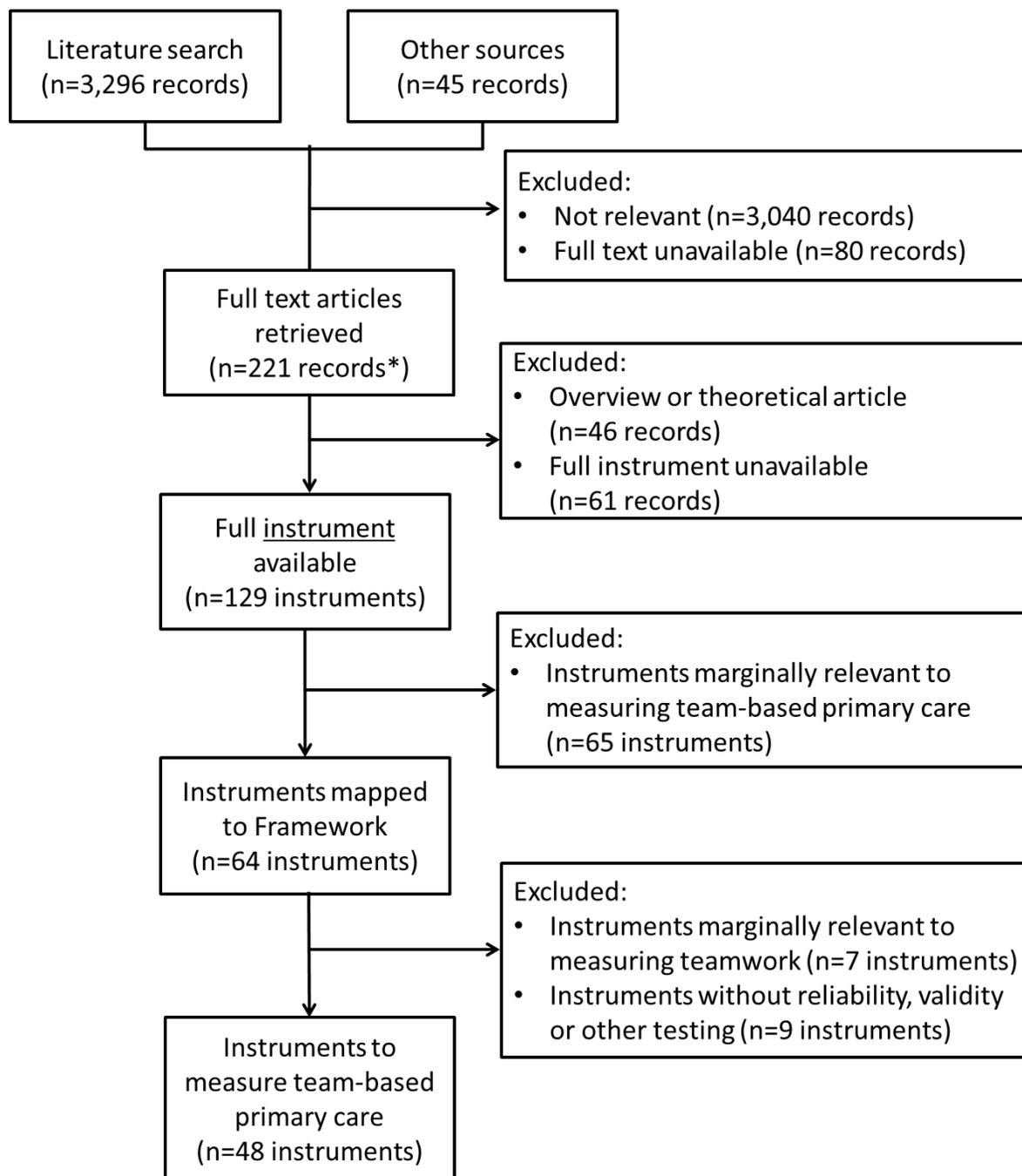
The development of the Conceptual Framework occurred in four steps:

1. A literature review seeking theories and conceptual frameworks of teams and teamwork, which led to the development of a preliminary draft of the Framework
2. A presentation of the draft Conceptual Framework to the expert panel for revision and reconstruction
3. A review of the Framework by investigators and site visitors from the Robert Wood Johnson Foundation funded project: “Primary Care Teams: Learning from Effective Ambulatory Practices.”
4. A concluding review by expert panel and outside stakeholders to finalize the Conceptual Framework.

Environmental Scan

There were two major phases of this work: an environmental scan to search for existing instruments that could be used to measure team-based primary care and mapping of the relevant instruments to the Conceptual Framework. Each of these phases is described in detail below. Figure 1 depicts the processes used to identify, select, and map the contents of the Atlas of Instruments to Measure Team-based Primary Care.

Figure 1. Identification, Review and Mapping of Instruments in the Atlas



*Some records included more than one instrument.

Scope

The purpose of the environmental scan was to identify instruments to measure “teamness” itself, as opposed to the outcomes of team-based primary care (e.g., patient outcomes or efficiency). We sought to identify instruments to measure internal team processes, enablers, functioning, structure, or other characteristics of teams. Because development of team-related theory, training, and measurement began in non-health care fields, including the military, aviation, and business, we cast a wide net in our search for instruments and looked beyond the health care literature. We excluded articles not written in English; however, we included articles describing instruments developed or used in other countries if the articles were published in English.

Search Methods and Sources

Literature Search

The peer-reviewed literature was searched using several electronic databases of journals and other sources that cover the fields of health care, social science, business, and other fields such as engineering and economics. Several of these databases also include materials from the grey literature. Databases searched are listed in Table 1. All databases except for JSTOR were searched in a single pass using EBSCO’s search tool; JSTOR was searched separately using its own search tool.

Search terms were developed after exploratory searches to focus the search on relevant materials, without excluding potentially useful references from the wide range of fields we wished to explore. Two databases initially explored (EBSCO’s News and Web News) were excluded from the final search because search terms like team or teamwork resulted in irrelevant references, such as reports of results of team sports games.

The final search string was:

(team OR teamwork OR team-based) AND (measure OR measurement OR assess OR assessment OR evaluate OR evaluation OR instrument OR survey OR questionnaire).

Because not all databases treated truncation symbols similarly, variations of terms were spelled out in the search string, e.g., assess OR assessment, not assess*. The search was applied to titles, abstracts (when available), and key terms (when available).

The search resulted in well over 200,000 citations. In order to manage the volume and increase the specificity of the search, without eliminating relevant terms or citations from valuable databases, results were ranked according to relevance.¹ They were then reviewed sequentially until less than 1% of the reviewed items were selected for full text retrieval, due to their apparent relevance to measurement of teamwork or team functioning; at that point, the review was halted. Two thousand two hundred citations from the EBSCO databases combined were reviewed; of these, 160 references were selected for further review. One thousand ninety six results from the JSTOR search were reviewed, and 20 articles deemed relevant; some of these were subsequently found to be duplicates of articles found in the EBSCO database search.

¹ The EBSCO and JSTOR search tools offer this feature; however, the specifics of the algorithms they use to determine relevance are not publicly available.

Table 1. Electronic Literature Databases Searched

Database ²	Fields Covered	Types of Literature	Results
Academic Search Complete	Social, behavioral, and physical sciences, engineering, law, mathematics, etc.	Peer-reviewed and other journals, monographs, reports, conference proceedings, etc.	40,132
Biomedical Reference Collection: Corporate	Biomedicine and health sciences to the health care system and pre-clinical sciences	Peer-reviewed and other journals	7,082
Business Source Corporate Plus	Business	Peer-reviewed and other journals, books, monographs, conference proceedings, case studies, etc.	115,260
EconLit	Economics	Journal articles, books, collective volume articles, dissertations, working papers, and full-text book reviews from the <i>Journal of Economic Literature</i>	1,181
Environment Complete	Environment-relevant sciences and policy	Peer-reviewed and other journals, monographs	4,597
JSTOR	Social sciences, medicine and allied health, business and economics	Peer-reviewed journals, books,	87,228
MEDLINE with Full Text	Medicine, nursing, dentistry, veterinary medicine, the health care system, and pre-clinical sciences	Peer-reviewed journals	37,216
SocINDEX with Full Text	Sociology	Peer-reviewed journals, books, monographs, conference papers	7,309

² Database names are those used in Abt's online library. MEDLINE with Full Text, and SocINDEX with Full Text are the names of the databases; it does NOT indicate that we searched only items for which full text was available.

Other Sources

Targeted searches of the grey literature were also performed, including a review of the Patient-Centered Medical Home (PCMH) recognition program of the National Committee on Quality Assurance (NCQA); reports from the Measures Application Partnership (convened by the National Quality Forum), the grey literature collection of the New York Academy of Medicine, and the website of the Institute for Healthcare Improvement. Other sources included several foundation websites (John A. Hartford, Commonwealth Fund, Josiah Macy, Robert Wood Johnson, Gordon and Betty Moore), AHRQ’s TeamSTEPPS website, and the websites of certain professional societies (American Board of Internal Medicine, American Academy of Family Practitioners).

Measure Database Searches

Several databases of health care-related measures were searched to identify relevant instruments. In general, these databases included few if any instruments that fell within the scope of our search. The databases searched, terms used, and results are summarized in Table 2. Team was the most general term used; however, depending on how specific databases were organized or what categories they used for instruments, additional terms were used to ensure thorough searching.

Table 2. Health Care Measure Databases Searched

Database	Search Terms	Instruments Identified (#)	Notes
HHS Measure Atlas	team	0	Includes measures used by one or more HHS quality programs
National Quality Forum (NQF) Quality Positioning System (QPS)	team, teamwork, “effective communication and care coordination”	1 (nursing work index measure subscale on nurse/physician relationships)	QPS includes 697 NQF-endorsed quality measures
National Quality Measures Clearinghouse	team	3	Includes over 2000 healthcare quality measures
USHIK	team	0	
GEM (NIH)	team	0	692 measures in this National Institutes of Health database, apparently contributed by public

Recommended Sources

In addition to items retrieved through our databases searches, we also added articles and other documents that were suggested by members of our expert panel or by the Project Officer, all sources mentioned in a key

review article by Valentine et al. 2012³ that were not already captured, through other sources, or by retrieval of sources frequently cited by key articles.

Processing and Abstracting Sources

The full text of 221 articles or other sources identified for further review were retrieved; in cases where full text was not available, we captured as much information as we could about team instruments from the abstract (if available). In three cases, the full text of an article was retrieved, but because it was not in English, or the quality of the translation into English was poor, it could not be abstracted.

Forty-six articles were found to be reviews of team measurement or theoretical articles. Some of the other articles included more than one instrument of interest; in total, we identified 191 instruments. The relevant articles were abstracted to capture information about these instruments, to the extent they were described by the authors:

- the name of the instrument (if named),
- instrument type,
- industry for which it was developed,
- authors' descriptions of constructs measured,
- sample sizes,
- respondent types, and
- availability of psychometric or other testing information.

The abstracted data were entered into an Excel spreadsheet in order to permit analysis for a report on the environmental scan findings.

Retrieving Instruments

We required the full text of the instruments themselves (as opposed to the article describing them). In cases where the relevant article did not include the full text of the instrument, we attempted to contact the lead or corresponding author by email to request it. In total, we obtained the full text for 129 of the 191 instruments.

Mapping of Instrument Items to Mediator Constructs in the Framework

The research team observed that, in general, instruments did not measure only a single construct in our Conceptual Framework, but were relevant to multiple constructs.

Therefore, the decision was made to map the instruments at the individual item (e.g., a specific question on a survey, or item on an observational checklist) level. Mapping refers to the classification of items by Conceptual Framework constructs deemed by team researchers to be addressed by the item. Mapping of the items permits the organization of items, and their corresponding instruments, into meaningful categories that can help guide evaluation of and research on team-based primary care.

³ Valentine MA, Nembhard IM, Edmondson AC. Measuring Teamwork in Health Care Settings: A Review of Survey Instruments. Working Paper 11-116. Dec 2012. Harvard Business School, Cambridge, MA. <http://www.rrsstq.com/stock/fra/publications/P217.pdf>.

One researcher (K. Fuda) performed an initial review of the full text instruments to determine if they appeared potentially relevant to the measurement of team-based primary care, and the constructs in the Conceptual Framework. If not, instruments were excluded from full mapping. A sample of included instruments was reviewed by other members of the team (M. Parchman; J. Schaefer) to confirm the decision to include; all were confirmed. In total, 65 instruments were excluded, while 64 were included and mapped at the item level.

Items from each of the 64 instruments were entered into individual Excel spreadsheets, and columns added for each of the twelve mediator constructs from the Conceptual Framework. For an initial set of four instruments, four researchers (S. Shoemaker, K. Fuda, M. Parchman, J. Schaefer) used the forms to indicate which constructs were addressed by each item. Results were compiled for each instrument and the team met by phone to review results, focusing on areas of disagreement. In order to maximize agreement among reviewers, a mapping guide was developed by J. Schaefer. The guide included definitions of each construct, examples of how the construct would manifest itself in team-based primary care, and in some cases “reference” items that exemplify relevant questions, and/or notes on what the construct means or how it is distinct from other related constructs. The team decided that an individual item would be mapped to no more than two constructs, to help ensure the most relevant constructs were chosen.

The remaining instruments were mapped by two researchers (M. Hunt and J. Levin). Their mapping results were compiled into individual Excel spreadsheets for each instrument, so that they could be compared, and final reconciled results entered. This reconciliation process was performed by one or two project team experts in team-based primary care (M. Parchman; J. Schaefer). During the reconciliation process, seven instruments were identified for exclusion from the Atlas on the basis that they were not clearly relevant to measurement of teamwork or team functioning.

Reconciled results were compiled into an Excel-based database to provide the information on instruments to support the web-based Atlas and to facilitate analysis.

Characterizing Instruments

The “level of data collection” and the “degree of adaptation that the instrument may require for use in a primary care setting” fields were designated by project team members (M. Parchman; J. Schaefer) as part of the reconciliation process. Two additional instrument-level fields were captured. The purpose of the instrument, as described by the authors, is captured. Additionally, we indicate the psychometric, development or testing methods the authors reported using to test reliability (test-retest, internal consistency, inter-rater), validity (face, content, criterion, construct), factor analysis (exploratory or confirmatory) or other development and testing methods. Finally, a full list of characteristics provided for each instruments is described in the Instrument Profiles section of the Atlas.