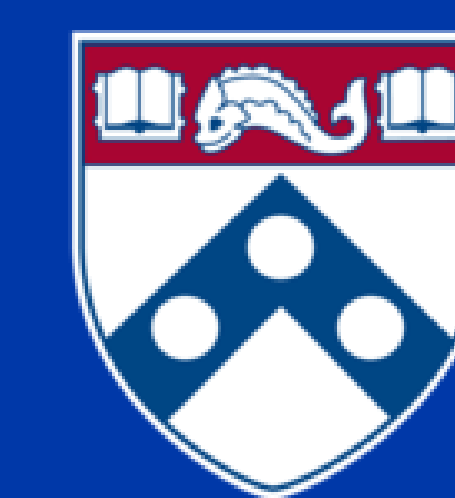
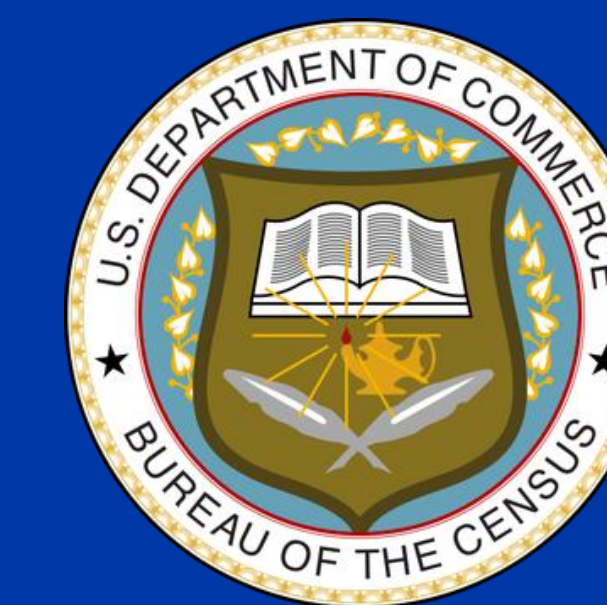


A Systematic Approach to Outcomes Assessment of Care Management Programs

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Objective

To develop a systematic approach to outcomes assessment of care management programs in health plan settings

Motivation

1. Care Management:

A care management program refers to a regimen of organized activities that is designed to improve health in a population with particular chronic conditions or risk profiles, with a focus on the triple aim: improving the **quality of care**, advancing **health outcomes**, and lowering **healthcare costs**.

2. Importance of Outcomes Assessment:

Comparative effectiveness of a care management program is crucial to its success and sustainability. A program's effectiveness can only be assessed with outcomes.

3. The Issue:

There is no accepted standard model for what constitutes a care management program, which makes comparisons of program effectiveness across settings very challenging.

4. Systematic Approach to Outcomes Assessment:

Guided by the principles of the triple aim and systems engineering, our systematic approach integrates the knowledge and best practices from a broad spectrum of disciplines including project management, systematic literature review, clinical trials, software engineering, and patient-centered outcomes research. The approach consists of 8 steps:

- (1) **Assembling an interdisciplinary project team**
- (2) **Analyzing program operation process**
- (3) **Constructing an analytic framework**
- (4) **Formulating study questions**
- (5) **Developing an analysis plan**
- (6) **Collecting and managing data**
- (7) **Conducting statistical analysis**
- (8) **Disseminating findings**

An Example: Maternity Care Management Program (MCMP)

Purpose:

To help pregnant women with complications self-manage their health during pregnancy and throughout the postpartum period

Intervention:

Education, care coordination, and minimizing the over-utilization of health care resources

Target Population:

Pregnant women with a history or current diagnosis of the following conditions: preexisting diabetes, gestational diabetes, hypertension, substance abuse, history of preterm birth, preterm labor history or signs/symptoms (less than 37 weeks of gestation), obesity, asthma, adolescent pregnancy, HIV/AIDS, and other conditions with potential risks

Enrollment:

Eligible women are identified through referral or risk-screening, contacted through outreach, and enrolled on voluntary basis.

Care Management Team:

obstetrical nurse case manager (lead), obstetrical physician consultant, social worker, health coach, behavioral health coordinator, maternity-care outreach coordinator

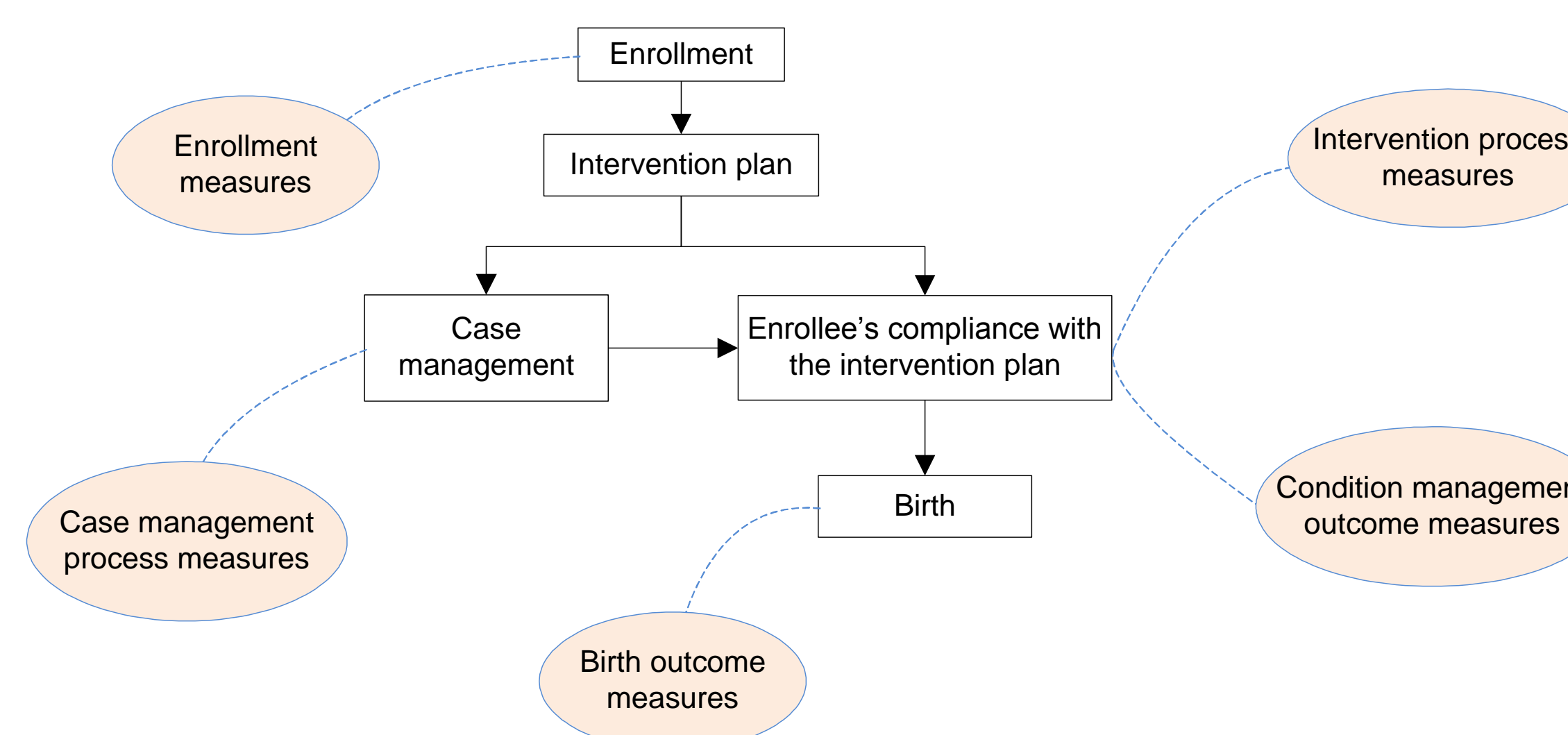
The Systematic Approach

(MCMP as an example)

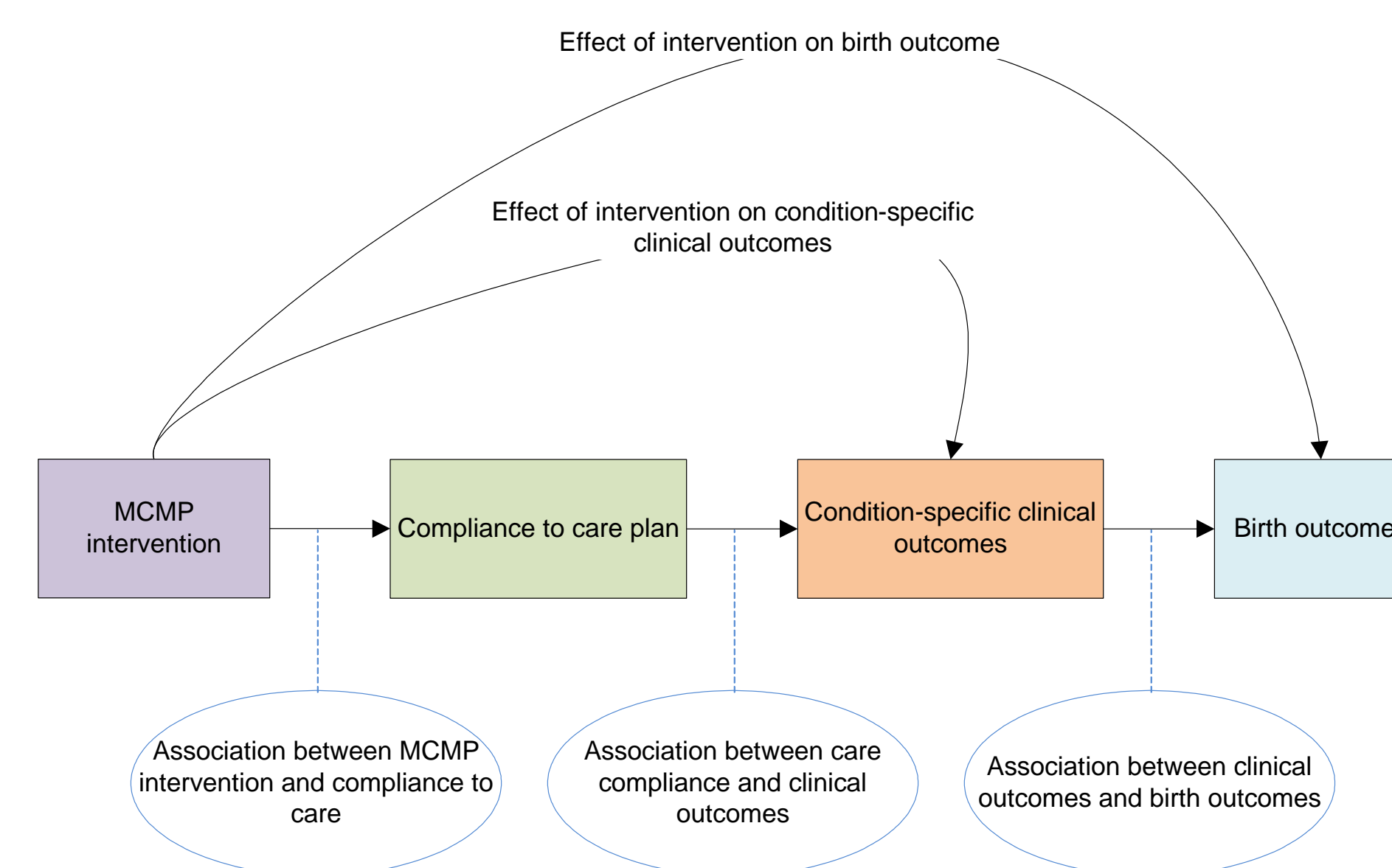
Step 1: Assembling an interdisciplinary project team

Role	Function
Clinician	Clinical subject-matter expert
Researcher	Study design
Statistician	Data analysis
Data analyst	Data sets construction
Project manager	Project monitoring and administration

Step 2: Analyzing program operation process



Step 3: Constructing an analytic framework



Step 4: Formulating study questions - PICOTS

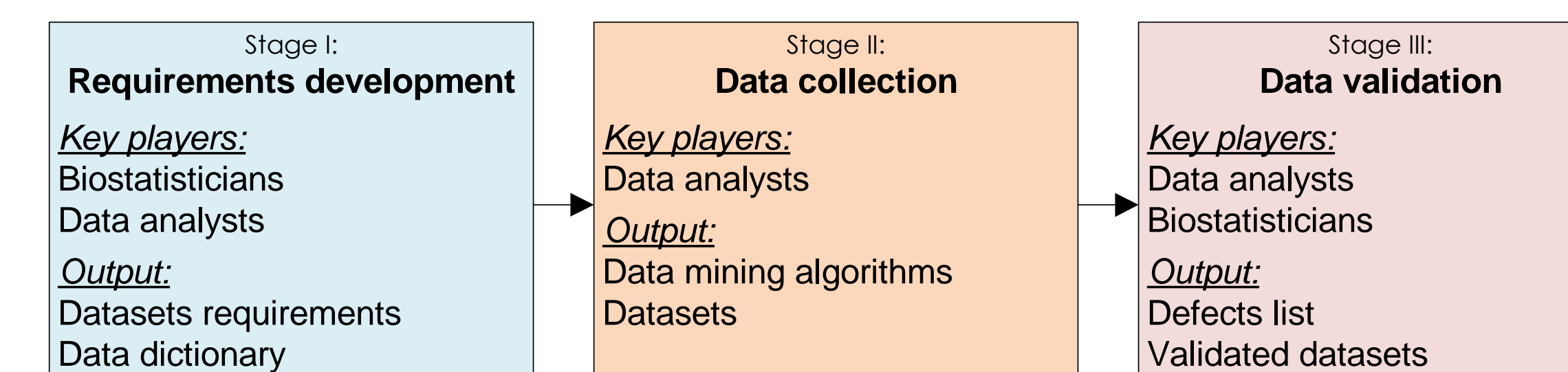
Category	Study Question	Population	Intervention	Comparator	Outcome	Timing	Setting
Process	Did larger percentage of MCMP enrollees comply with prenatal OB visit schedule than non-MCMP enrollees?	Pregnant women with complications	MCMP	No MCMP	Prenatal OB visit schedule	Scheduled OB visit	Health plan
Clinical	Did larger percentage of MCMP enrollees with diabetes who complied with prenatal OB visit schedule have full-term birth than those who did not comply?	Pregnant women with diabetes	OB visit compliance	OB visit non-compliance	Birth term	At birth	Health plan
Utilization	Did larger percentage of MCMP enrollees with diabetes who maintained A1C < 7 have no emergency department visits as compared to those whose A1C ≥ 7?	Pregnant women with diabetes	Maintaining A1C < 7	Not maintaining A1C < 7	Emergency department visit	At birth	Health plan

Step 5: Developing an analysis plan

For each study question, define the following:

- Study variables
- Study populations
- Study period
- Statistical analysis methods

Step 6: Collecting and managing data



Step 7: Conducting statistical analysis

Two-stage approach – descriptive statistics followed by inferential statistics

Descriptive statistics to obtain basic characteristics of data distribution and to exam if the data distribution conforms the assumption on which the intended inferential analysis method is based

Inferential statistics to estimate the intervention effect on the target population

Step 8: Disseminating findings

Three commonly-used forms:

- Executive summary
- Full report
- Peer-reviewed publication

Conclusion

This systematic approach is practical and rigorous for outcomes assessment using operation-based data sources, and offers a road map to evidence-based care management. The next step is to generalize it to care management as well as quality improvement programs in other healthcare settings.