

# Adopting EMR-Catalyzed Nurse Case Management: Early Results from DIG-IT

Randall D. Cebul, M.D.

Professor of Medicine, Epidemiology and Biostatistics  
Center for Health Care Research and Policy  
Case Western Reserve University at  
MetroHealth Medical Center  
rdc@case.edu

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# **Diabetes Improvement Group–IT (DIG-IT) Team**

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## **Center for Health Care Research & Policy**

- Randall D. Cebul, MD, PI
- Peter J. Greco, MD
- Scott S. Husak, MS
- Thomas E. Love, PhD
- Douglas Einstadter, MD
- Neal V. Dawson, MD
- Mark E. Votruba, PhD
- Mary Jo Roach, PhD
- Kimberly Bauchens, RN
- Denise Kaiser, RN, CDE
- Renee Ellert, RN, CDE

## **Cleveland Clinic**

- C. Martin Harris, MD, Co-PI
- Holly Miller, MD
- Anil Jain, MD

## **Weatherhead School of Management**

- Betty VandenBosch, PhD

# Background

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- Electronic medical records (EMRs) can facilitate real-time decision support, including adoption of nurse case management (NCM).
  - Opportunity presented for needed support at the right time and place
- As part of an EMR-catalyzed Disease Management intervention in Diabetes Mellitus (DM<sup>2</sup>), PCPs in the DIG-IT trial have timely opportunities to refer patients to NCM

# Background

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- Little is known about PCPs' adoption of real-time decision support:
  - measures variably defined: “ever-used”, “no. of times used”...and, often not described
  - responsiveness to different types of support unclear
- Better understanding of adoption can help us to:
  - Better understand negative studies or those with small effect sizes
    - Few opportunities? Not needed/useful? Not adopted?
  - Better distinguish the effects of adoption from secular trends in ‘positive’ but non-experimental studies
    - Was the available decision support *causal* in producing the outcome?

# In the DIG-IT Trial, EMR-catalyzed DM<sup>2</sup> (including NCM) is available to 5 group practices in one system

EMR  
Only

DM<sup>2</sup>

MC

MC++

Both

MHS – one system

2 Clusters

10 Practices (5+5)

~65 PCPs

~6000 Pts

CCF – one system

3 Clusters

14 Practices

~130 PCPs

~9000 Pts

# Within DM<sup>2</sup>, there are two types of Opportunities to access NCM

## Encounter-based Alerts

**Alert:** “Mrs. Smith’s A1c is over 8.5 and increasing”

**SmartSet:** Refer

## “Staff Msg” Solicitations

***Priority Patient:***  
“Here’s how I can help”

PCP Refers

Nurse Case Management

Order a Test

Order Rx, Imm

Appt, referral

Social Svcs

# Alerts vs Priority Patient Solicitations

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- **Alerts for NCM**

- Visit-based
- **Highlight** A1c trouble
- Most recent A1c is high ( $>$  “x”) and worse than the value preceding it.
- Automated order set to facilitate NCM
- Voluntary

- **Priority Pt. Solicitation**

- EMR “in-basket message”
- Based on Priority Score (PS)
- Weekly PS update to NCM, multiple dimensions:
  - A1c, BP, Smoking, medications for lipids and albuminuria; recent missed visits, ED visits, etc
  - Personalized but highly formatted letter to PCP
  - Requires order of “DM101”

# Adoption of Decision Support

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- To adopt real-time decision support, there must be a timely Opportunity:
  - Adoption = Relevant Action, given a timely Opportunity
  - Non-adoption = Relevant Action Not Taken, given a timely Opportunity
- In DIG-IT, there are 2 Types of Timely Opportunities to Adopt NCM:
  - NCM Ordered/Alert, or
  - NCM Ordered/Solicitation
- **Adoption (%) ~ (NCM Orders/Opportunities) x 100**

# Objectives of Presentation

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To define and describe adoption of EMR-catalyzed NCM in a trial of decision support to improve diabetes care and outcomes

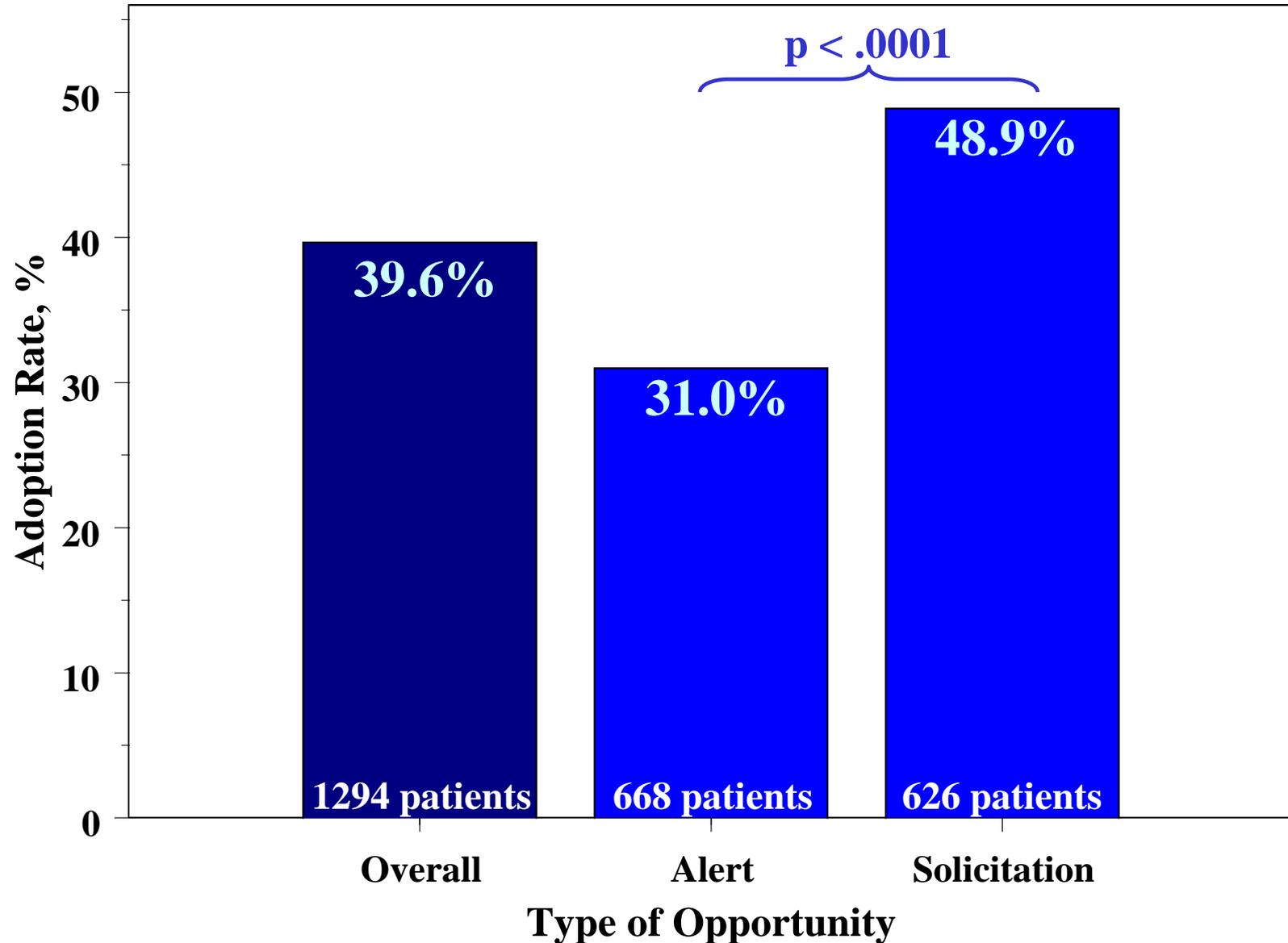
1. Overall, and by type of opportunity (encounter-based Alert vs. Solicitation)
2. Variations in adoption, by PCP and by site

# Practices' Baseline Characteristics and **Need** for Support

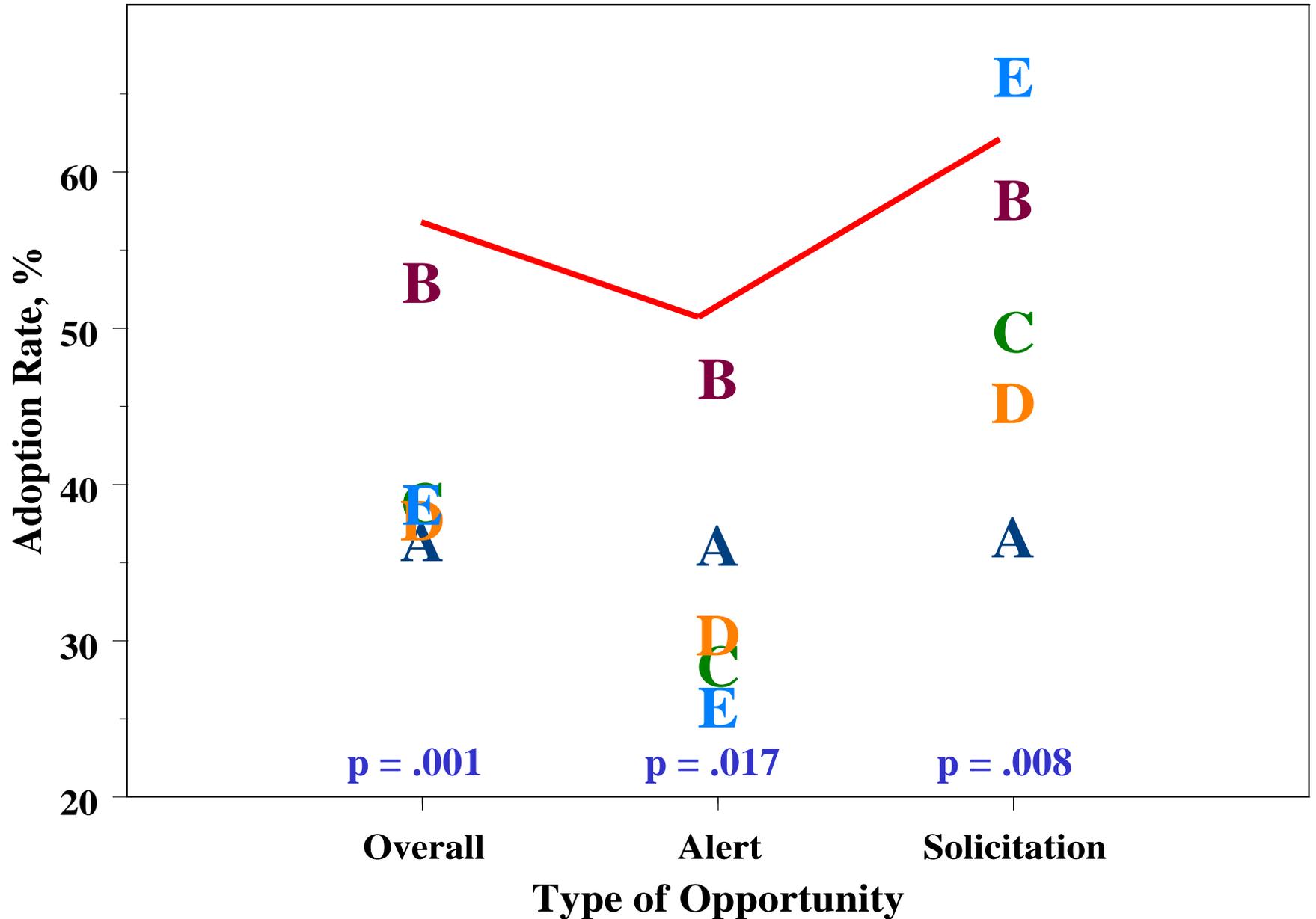
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|----------------------------------|-------------|
| <b># of Practices</b>            | <b>5</b>    |
| <b>Patient Volume</b>            | <b>2281</b> |
| <b># of Physicians</b>           | <b>56</b>   |
| <b>% African-American race</b>   | <b>48.7</b> |
| <b>% Hispanic ethnicity</b>      | <b>9.7</b>  |
| <b>Last A1c &lt;7.0, %</b>       | <b>36.7</b> |
| <b>Last A1c ≥ 9, %</b>           | <b>18.8</b> |
| <b>Last LDL &lt; 100, %</b>      | <b>30.7</b> |
| <b>Proteinuria on ACE/ARB, %</b> | <b>65.7</b> |
| <b>% Current Smoker</b>          | <b>25.2</b> |
| <b>% Eye Exam in Past Year</b>   | <b>46.4</b> |
| <b>% 1+ ED visit in 2004</b>     | <b>32.2</b> |

# EMR-Catalyzed Adoption: Overall, and by Type of Opportunity



# Variable Adoption and Patterns Across Sites



# PCP-level Opportunities and Adoption

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- Overall, 1294 patients presented 56 PCPs with at least 1 opportunity to refer to NCM
  - Median (IQR) n of Pts/PCP: 17 (10-28)
- Significant Variation in Adoption across PCPs
  - 38% (21/56) of PCPs adopted NCM for at least half of their patients with opportunities
  - 11% (6/56) PCPs never adopted NCM; 89% adopted NCM at least once
  - PCPs adopted patients with Solicitations more frequently than those with Alerts
    - 5.5% of PCPs adopted all solicitations
    - 52% of PCPs adopted at least half of their solicitations

# Summary

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1. We defined Adoption at the PCP-level and Patient-centered as the proportion of patients with timely Opportunities for whom action was taken
2. All PCPs had at least one opportunity to obtain real-time decision support (NCM); half of the PCPs had at least 17 patients with opportunities
3. Overall, PCPs adopted NCM for 39.6% of their patients presenting them with opportunities
  - PCPs were more responsive to Solicitations (48.9%) than to Alerts (31.0%).
4. There was significant variation in adoption across sites and PCPs

# Future Analyses of Adoption and NCM

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- To examine characteristics of PCP adopters and non-adopters and their decisions
- To compare outcomes of referred and similar non-referred patients:
  - Experimental group patients
    - Alert or Solicitation provided but not referred
  - Control group patients (no decision support)
    - Alert criteria met or same Priority Score
- To estimate the cost-effectiveness of NCM