



Design Rationale

- Treatment and comparison group at each site controls for local trends or events
- Before and after measures in each group allow organizations/patients to be their own controls
- "Differences in differences" analysis

Chart-Based Quality Indicators

15 (12 process and 3 outcomes) indicators adapted from DQIP, QA Tools, other existing guidelines

- Diagnosis
 - Eye exam
- Treatment
 - Lipid lowering if lipids elevated
- Counseling
 - Diet, medication
- Outcomes:
 - HgbA1C, BP, cholesterol

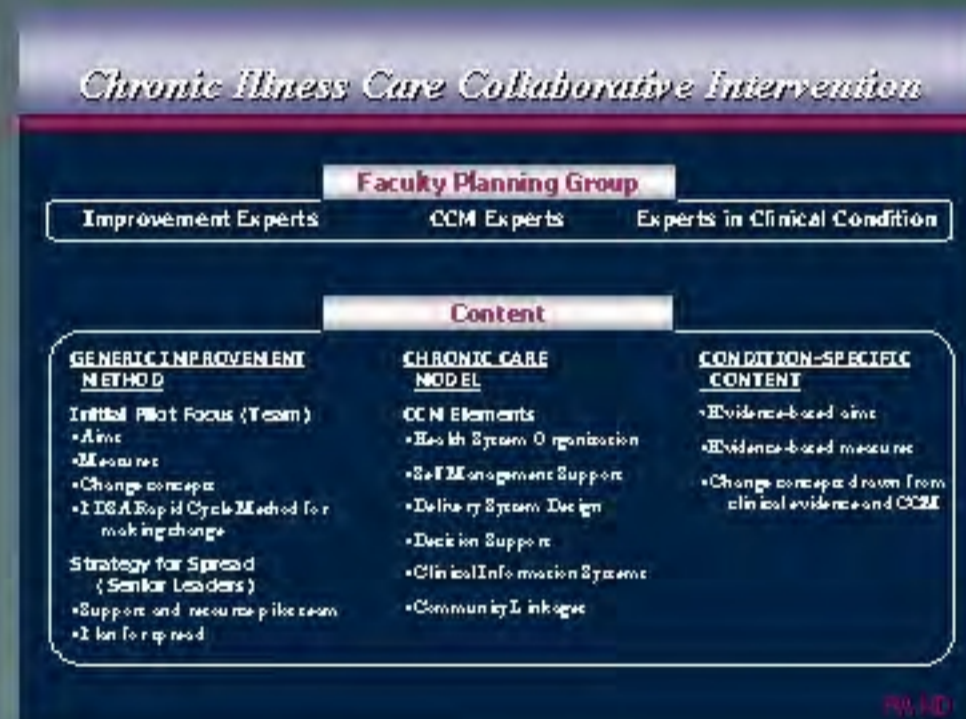
Results

- Both the pilot and control groups showed major improvements in diabetes process and outcomes.
- Pilot sites with more QI activities has larger improvements.
- Control sites that were closer* to pilot sites improved more than controls that were not.
- Glycemic control up 17% in the pilot group, 14% in control group and 2% in 1999-2000 NCQA data
- Eye exam rates up 19% in the pilot group, 13% in the control group, and 3% in the NCQA data.
- Pilot group improved significantly more than control only for foot exam and collaborative goal setting.

* scale based on distance, staff and organization overlap

Conclusions

- Pilots and controls improved much more than secular trends.
- Lack of difference between pilot and control sites may be due to volunteer bias or contamination of control sites.
- Nonetheless, participation in the collaborative using the CCM resulted in large improvements in care.



Evaluation Data Sources

- Administrative and Clinical Databases
- Patient Telephone Surveys
- Chart Review and Abstraction
- Clinician and Manager Surveys
- Routine Collaborative Reports

Chart Abstraction and Statistical Methods

25 month (mo) study period

- 11 mo Pre; 3 mo roll-out; 11 mo Post

Computerized data collection tool

- Highly reliable (k=.86 at indicator level)

Hierarchical regression models

- Controlling for baseline demographics, initial values of each dependent variable
- Patients nested within sites

Table 2: Quality of Care at Baseline for Pilots and Controls

| | Pilot N | Pilot mean | Control mean | P value if <.1 |
|---|---------|------------|--------------|----------------|
| <i>Overall Score</i> | 368 | 0.553 | 0.551 | |
| Any HbA1c | 368 | 0.891 | 0.870 | |
| Eye exam | 368 | 0.329 | 0.297 | |
| Any LDL/HDL | 368 | 0.538 | 0.573 | |
| Microalbuminuria test | 266 | 0.545 | 0.500 | |
| Foot exam | 368 | 0.870 | 0.862 | |
| Referred for DM education | 137 | 0.569 | 0.624 | |
| 2+ visits 3+ months apart | 368 | 0.913 | 0.899 | |
| Counseled if had HTN | 153 | 0.882 | 0.816 | .02 |
| ASA prophylaxis | 358 | 0.383 | 0.427 | |
| Beta Blocker if CAD | 118 | 0.432 | 0.358 | |
| Intervention to lower cholesterol if elevated | 67 | 0.687 | 0.667 | |
| Goal setting | 368 | 0.098 | 0.172 | .01 |
| <i>Process score</i> | 368 | 0.578 | 0.576 | |
| HbA1c < 8% | 328 | 0.454 | 0.502 | |
| LDL <= 130 | 179 | 0.760 | 0.629 | .01 |
| BP < 140/90 | 360 | 0.492 | 0.489 | |
| <i>Outcome score</i> | 364 | 0.530 | 0.516 | |

Table 3: Improvements in Quality Indicators at Pilot and Control Sites

| | Improvement in mean quality | | P value for overall Improvement if <.1 | P value for difference in Improvement if <.1 |
|---|-----------------------------|---------|--|--|
| | Pilot | Control | | |
| <i>Overall Score</i> | 0.060 | 0.046 | .02 | |
| Any HbA1c | -0.024 | -0.011 | | |
| Eye exam | 0.188 | 0.135 | .04 | .08 |
| Any LDL/HDL | 0.022 | 0.066 | .09 | |
| Microalbuminuria test | 0.155 | 0.107 | | |
| Foot exam | 0.054 | 0.045 | | .04 |
| Referred for DM education | 0.152 | 0.020 | | .10 |
| 2+ visits 3+ months apart | -0.011 | -0.011 | | |
| Counseled if had HTN | 0.031 | 0.083 | .04 | |
| ASA prophylaxis | 0.025 | 0.038 | | |
| Beta Blocker if CAD | 0.119 | 0.119 | .05 | |
| Intervention to lower cholesterol if elevated | 0.050 | -0.074 | | .07 |
| Goal setting | 0.092 | -0.029 | | .001 |
| <i>Process score</i> | 0.056 | 0.041 | .04 | |
| HbA1c < 8% | 0.162 | 0.128 | .05 | |
| LDL <= 130 | 0.130 | 0.179 | .01 | |
| BP < 140/90 | 0.040 | 0.003 | | |
| <i>Outcome score</i> | 0.075 | 0.074 | .01 | |

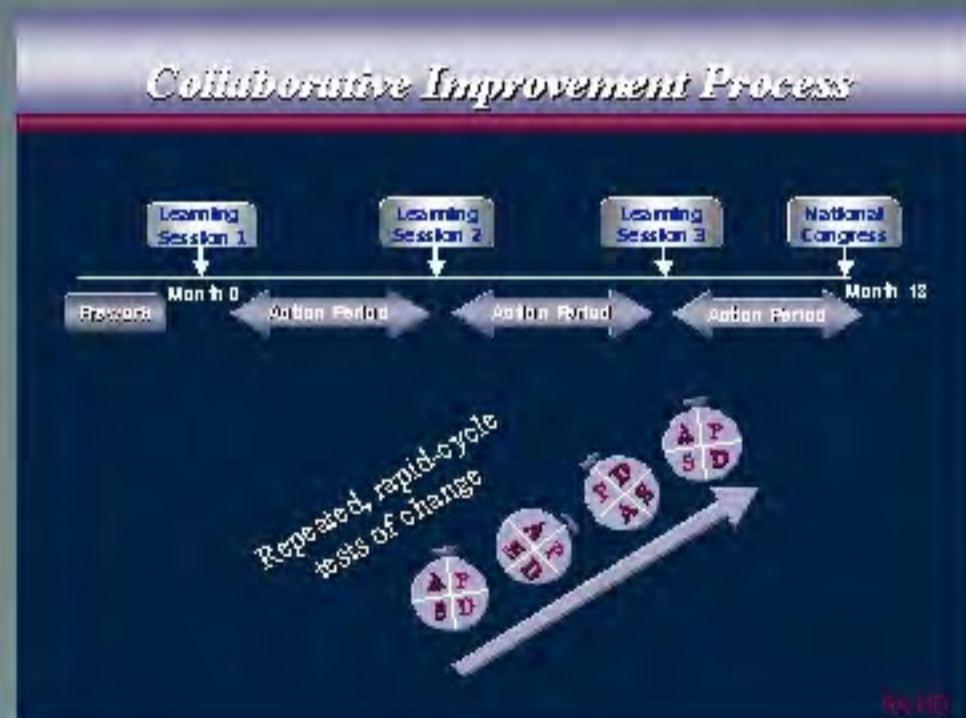


Table 1: Patient Measures in Pilot and Control Samples at Baseline

| | Pilot | Control |
|-------------------------|-------|---------|
| N | 368 | 377 |
| Male | 0.73 | 0.69 |
| Age >=65 | 0.51 | 0.48 |
| Insurance | | |
| Insured | 0.85 | 0.87 |
| HMO | 0.17 | 0.14 |
| Race | | |
| White | 0.86 | 0.87 |
| African American | 0.08 | 0.07 |
| Education | | |
| <=High School | 0.25 | 0.24 |
| High School Grad | 0.25 | 0.29 |
| Some college | 0.32 | 0.33 |
| BA | 0.09 | 0.06 |
| Grad School | 0.07 | 0.06 |
| Income | | |
| <\$15000 | 0.23 | 0.24 |
| \$15000-30000 | 0.33 | 0.39 |
| \$30000-50000 | 0.26 | 0.20 |
| >=\$50000 | 0.16 | 0.16 |
| Number of comorbidities | 1.41 | 1.30 |
| Smoker | 0.49 | 0.54 |
| Drinks Alcohol | 0.68 | 0.71 |

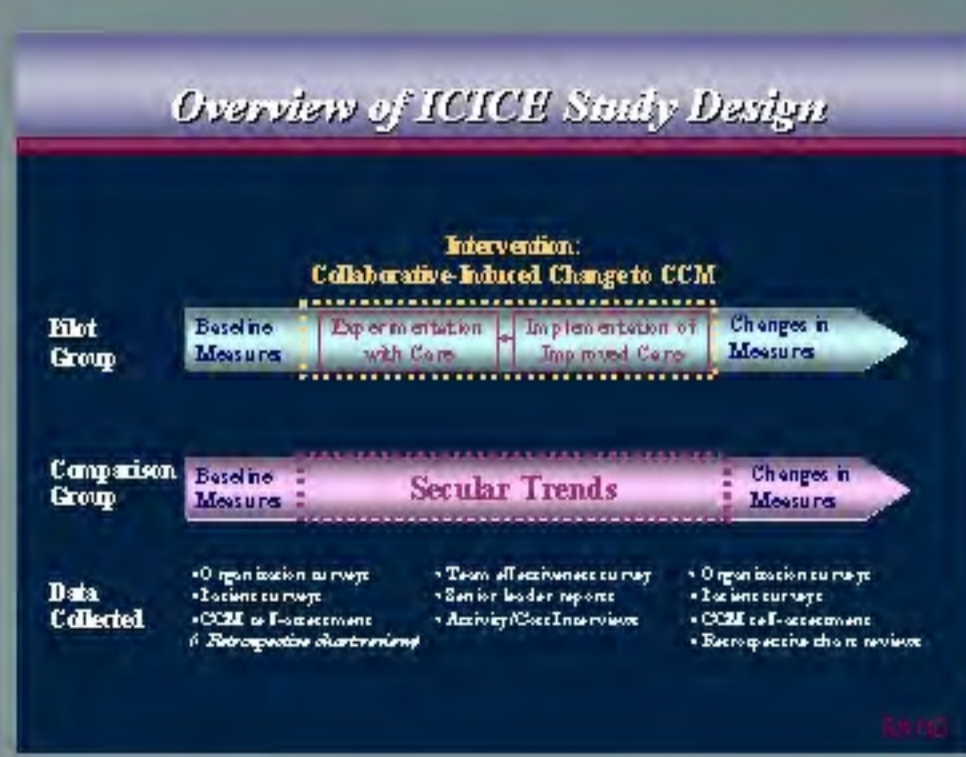


Chart Abstraction Sample

2473 patients in 6 non-hospital sites

1140 consented to chart review (46%)

1040 abstracted (91%)

745 with sufficient before and after data

- a contact between October 1998 and May 1999, and one in August 1999 to May 2000
- 368 pilot, 377 control