Multilevel Interventions Can Enhance Diabetes Outcomes: Mid-term Results from the Alliance to Reduce Disparities in Diabetes

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Abstract
The Alliance to Reduce Disparities in Diabetes integrates innovation in professional and patient education and quality of care improvements aimed at a multilevel patient. The Alliance focuses on reducing disparities in diabetes care and enhancing diabetes outcomes through clinical and community interventions. The Alliance comprises five grantees, a National Program Office (NPO) at RTI International, and an external evaluation team. The sites enrolled a multiethnic and multiracial patient population with diabetes. The evaluation suggested that by using multilevel, multifocal interventions that included patient, provider, and system components, diabetes outcomes can improve. A primary aim of the Alliance to Reduce Disparities in Diabetes was to enhance diabetes outcomes through clinical and community interventions that are delivered across sites enrolled in the Alliance. The sites included diversity in patient populations, and the evaluation team developed and implemented multilevel interventions to enhance diabetes patient, clinical care, and health care system changes. The five grantees include:

- Improving Diabetes Care and Outcomes on the South Side of Chicago, University of Chicago, Illinois
- Camden City-Diabetes Collaborative, Camden, New Jersey
- Student Life Program, Memphis, Tennessee
- Reducing Diabetes Disparities in American Indian Communities, Wind River Health, Wyoming
- The Diabetes Equity Project, Dallas, Texas

Interventions

1. Background
The Alliance to Reduce Disparities in Diabetes integrates innovation in professional and patient education and quality of care improvements aimed at a multilevel patient. The Alliance focuses on reducing disparities in diabetes care and enhancing diabetes outcomes through clinical and community interventions. The Alliance comprises five grantees, a National Program Office (NPO) at RTI International, and an external evaluation team. The sites enrolled a multiethnic and multiracial patient population with diabetes. The evaluation suggested that by using multilevel, multifocal interventions that included patient, provider, and system components, diabetes outcomes can improve. A primary aim of the Alliance to Reduce Disparities in Diabetes was to enhance diabetes outcomes through clinical and community interventions that are delivered across sites enrolled in the Alliance. The sites included diversity in patient populations, and the evaluation team developed and implemented multilevel interventions to enhance diabetes patient, clinical care, and health care system changes. The five grantees include:

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2. Cross-site Evaluation
Method
RTI and the NPO conducted a cross-site evaluation of the Alliance. We collected clinical and patient reported data from all five grantees to understand early results and evaluate site differences. The evaluation team conducted site visits to understand the processes used to implement the intervention. The results can be used to document the extent to which the intervention was implemented. To understand the net effect of the Alliance on program outcomes and diabetes outcomes, all data reported are aggregated across all sites.

Results
- All five grantees provided clinical, RTI, and patient reported outcomes and diabetes care, quality of life, resources, and supports for self-management, and diabetes self-care behaviors for patients; program participants for the Missouri external evaluation.
- At mid-term of the 5-year program, participant cohort data were collected from five grantees, and data reported are aggregated across the grantee sites.
- As of April 2013, 7,618 encounters took place across the five sites with a total of 1,488 patients, in which they discussed an average of three to four diabetes self-management topics.
- Table 1: Changes in Medical Measures Across All Systems
- Table 2: Changes in Patient-Reported Measures Across All Systems
- Table 3: Changes in Clinical Outcomes Across All Systems
- Table 4: Changes in Clinical Measures Performed by Patients and Program Participation Status

3. Preliminary Results
3.1 Changes in Clinical Measures Across All Systems
Table 1: Changes in Medical Measures Across All Systems

<table>
<thead>
<tr>
<th>Measure</th>
<th>Site</th>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Initiation</td>
<td>All First 99 480 32 233 95</td>
<td>Baseline 2.9 290 0 7</td>
<td>0.000</td>
<td>4 Follow-up 5.3 290 0 7</td>
<td>0.002</td>
<td>4 Follow-up 4.6 288 0 7</td>
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<tr>
<td>General diet</td>
<td>All First 99 480 32 233 95</td>
<td>Baseline 4.2 287 0 7</td>
<td>0.000</td>
<td>4 Follow-up 3.2 290 0 7</td>
<td>0.002</td>
<td>4 Follow-up 4.6 288 0 7</td>
</tr>
<tr>
<td>Smoking and alcohol</td>
<td>All First 99 480 32 233 95</td>
<td>Baseline 1.1 287 0 7</td>
<td></td>
<td>4 Follow-up 2.1 290 0 7</td>
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<td>4 Follow-up 2.4 288 0 7</td>
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<tr>
<td>Resources and supports for self-management</td>
<td>All First 99 480 32 233 95</td>
<td>Baseline 0.35* 287 0 7</td>
<td>0.000</td>
<td>4 Follow-up 0.13 290 0 7</td>
<td>0.000</td>
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<tr>
<td>Diabetes self-care behaviors</td>
<td>All First 99 480 32 233 95</td>
<td>Baseline 4.2 287 0 7</td>
<td>0.000</td>
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3.2 Changes in Patient-Reported Measures Across All Systems
Table 2: Changes in Patient-Reported Measures Across All Systems

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4. Discussion
Although this project is not a directly controlled clinical trial, reliability through the multi-site programs, comparison of changes in health measures and patient reported measures from baseline to follow-up and these improvements across multiple measures, are meaningful. We conducted several multi-site comparisons of the five Alliance programs. Each site will be doing primary research on changes that are self-reported by diabetes population.