ICSI Institute for Clinical Systems Improvement

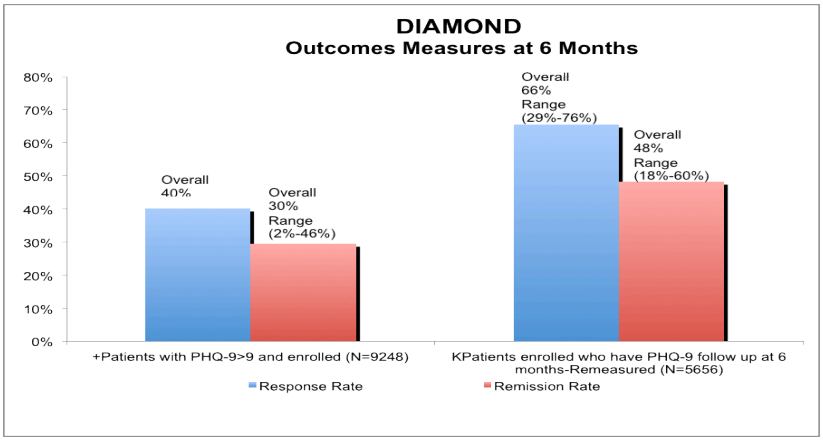
DIAMOND Study Findings

The DIAMOND (Depression Improvement Across Minnesota, Offering a New Direction) Initiative was pioneering work to change how care for patients with depression was delivered and paid for in primary care.

The DIAMOND model was based on research (more than 37 randomized control trials) and built primarily around the components of the University of Washington AIMS Center's IMPACT (Improving Mood: Providing Access to Collaborative Treatment) care model. The components of DIAMOND include: use of a care manager and consulting psychiatrist to support the primary care provider, screening for depression using the PHQ-9, use of a registry to monitor patient progress, intensification of treatment, and relapse prevention.

The DIAMOND model was implemented in almost 100 clinics. This was not an easy model to implement as it involves change on multiple levels in a given clinic, and several clinics dropped out over the years for various reasons. The outcomes for the approximately 12,000 patients who were enrolled in the DIAMOND model from March 2008 through March 2013 are shown in the graph.

Patients includes all with major depression or dysthymia diagnoses with PHQ-9>9 who enrolled into DIAMOND and did not decease or transfer care to another health care system. Re-measured denominator includes all patients enrolled into DIAMOND who had PHQ-9 follow-up at 6 months, +/-30 days



Clinic Implementation Data

The two sets of bar graphs include response and remission rates based on *intent to treat* on the left side and *completers* on the right. Some definitions help explain what this graph conveys:

- **Response**—a 50 percent or more PHQ-9 score reduction from baseline at six months.
- **Remission**—a PHQ-9 score in the non-depressed range (<5) at six months.
- **Intent to treat** is a common approach to population data where the denominator includes all eligible patients such that *any patient who was lost to care was considered to have never improved* – this conservative approach is used in Minnesota Health Scores as well,

such that percentages may underestimate true response and remission since patients who are well do not always provide results.

- **Completers** only include those patients that clinics could reach for outcomes data at six months and, as such, this model tends to exaggerate response and remission.

Above each bar in the graph the range of DIAMOND patient outcomes by clinics is shown. A big part of the story of the DIAMOND initiative is that there was a lot of variation in response between clinics all implementing the same model of care. It is important to note that the data in the bar graph is not compared with any control population, as is often the case in research environments.

Evaluation Studies

Through a National Institute of Mental Health (NIMH) grant, the HealthPartners Institute for Education and Research (HPIER) evaluated the DIAMOND model. The Mayo Clinic has also evaluated the effectiveness of the DIAMOND model in its own clinics (without external comparisons). In these instances, the results of DIAMOND patients were compared with a control population in usual practice. The studies showed different results:

NIMH Study: Patients that received DIAMOND care as implemented did not have any statistically better depression outcomes than did those receiving usual care, although their satisfaction with care was higher. On the one hand, this study has a much more careful way of identifying a control population for comparison than the Mayo study below. On the other hand, it did not include Mayo patients (the largest subset of DIAMOND enrollees) due to difficulties in data sharing at the time of the study.

Mayo Studies: Mayo providers have done several studies on the patients seen in primary care at Mayo clinics. In each of those studies published, DIAMOND patients have achieved better response (16-28 percent better) and remission rates (20-34 percent better) based on the PHQ-9 than those receiving usual care. Control populations in these studies were retrospectively matched in all but one study[1] where patients were recruited prospectively such that those in usual care were a combination of patients who were in clinics without DIAMOND available and those who did not enroll in DIAMOND for a variety of reasons. In that study, the DIAMOND response rate was 68.7 percent (versus 52.9 percent in usual care) and the remission rate was 52.7 percent (versus 31.3 percent in usual care) at six months.

The results from the NIMH study are unexpected and disappointing. The NIMH study design is more rigorous, but Mayo patients were mostly excluded. The Mayo studies were not as rigorous, but probably represent what is typically possible in unfunded reviews by practice sites of the outcomes of a practice change.

Neither study gives a comprehensive view of the entire DIAMOND initiative. For example, since the DIAMOND initiative was a quality improvement initiative, there was no control or standard comparison group for DIAMOND. The real story may be that implementation of a proven model of care in practice is tough and that results will vary considerably by clinic. Future studies need to pay more attention to this variance.

Two conclusions can be drawn based on both studies.

- Usual care for depression in Minnesota in the ICSI primary care clinics is very good in comparison to the rest of the country and may have contributed to the HPIER study's inability to show better results for the population.
- A more aggressive treatment-to-target through medication intensification may contribute to better outcomes. One Mayo study[2] showed a significantly greater number of anti-depressant medications ordered for DIAMOND patients when compared to patients receiving usual care. Trends in the DIAMOND patient registry showed that medication changes over an eight-month period were about half of that seen in the IMPACT study.

Advancing Integration of Mental and Medical Care

ICSI is taking the lessons learned from DIAMOND to continue to improve the integration of behavioral and medical care. Advances in this area stemming from the DIAMOND work to date include the following:

1. DIAMOND led to many changes in how clinics delivered depression care and enhanced the systems for treatment of depression in primary care.
2. Implementing DIAMOND resulted in the adoption of the PHQ-9 through MN Community Measurement to establish measures for clinic performance for patients with depression; the National Quality Forum adopting ICSI's depression measures and use of the PHQ-9 as the standard for screening patients for depression.
3. DIAMOND provided one of the first care coordination models in Minnesota and many groups have built their health care homes based on the lessons learned.
4. DIAMOND provided an opportunity for expansion to other mental health conditions (Mayo Clinic's CALM program offering therapy for anxiety in primary care) and the adolescent population (Mayo Clinic's EMERALD program adapting collaborative depression care to adolescent patients).
5. The DIAMOND model was adapted as part of the Partners in Integrated Care (PIC) program, an Agency for Healthcare Research and Quality-funded dissemination project to extend depression and substance use screening and management in primary care in four states.
6. DIAMOND has been adapted as part of the COMPASS (Care Of Mental, Physical And Substance-use Syndromes) initiative, a Centers for Medicare and Medicaid Services-funded project to integrate a physical and mental health collaborative care model into primary care.

References:

1. Shippee ND, Shah ND, Angstman KB, et al. Impact of collaborative care for depression on clinical, functional, and work outcomes; a practice-based evaluation, J Ambul Care Manage. 2013,vol. 36, No. 1, pp. 13-23.
2. DeJesus RS, Angstman KB, Cha SS, et al. Antidepressant medication use among patients with depression: comparison between usual care and collaborative care using care managers. Clinical Practice & Epidemiology in Mental Health, 2013, vol. 9, pp. 84-87.