Conversation Map® Programs: A Quantitative and Qualitative Analysis of Usage and Outcomes

Abstract

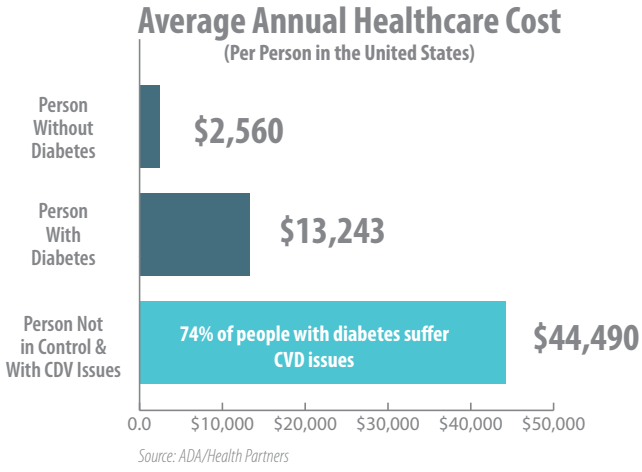
Diabetes self-management education and support (DSME/S) has been highlighted by numerous national and international authorities—including the International Diabetes Federation (IDF) and national associations like the American Diabetes Association (ADA), Diabetes UK and the Canadian Diabetes Association (CDA)—as a crucial component of integrated diabetes care.

Over the past decade, healthcare providers worldwide have validated the ***Conversation Map*** *approach, the world's only unifying DSME/S curriculum, as uniquely effective in communicating the knowledge, skills and ability necessary for diabetes self-care. This research validation has proven strongest in the 95% of the global diabetes population that does not already receive optimal care.[1] Patient-centered in its approach, DSME/S with* ***Conversation Map*** *education tools has shown significant resulting clinical outcomes, including reductions in HbA1c, blood pressure, cholesterol, and hypoglycemia events[2],as well as increased rates of retinopathy screenings and foot exams. DSME/S with* Map *tools has been proven to increase patients' knowledge and understanding of diabetes, their self-care motivation and acceptance of personal responsibility, their self-care adherence and success. Diabetes educators have reported that* Map *tools make group facilitating more interactive and engaging, boosting patient empowerment and interest in diabetes education, and improving observed patient engagement and outcomes.*

Key Words: *diabetes education, adherence, evidence-based DSME/S, empowerment,* ***Conversation Map*** *tools, outcomes, Healthy Interactions, patient-centeredness, diabetes self-management.*

Introduction

Diabetes is out of control. Worldwide, 347 million people live with diabetes, according to the World Health Organization (WHO)[3], compared to 180 million 15 years ago. Exacerbating the severity of this pandemic is a dramatic drop in the number of people who are able to manage their diabetes: from 50% twenty years ago to about a third today. About 29 million people in the U.S. have diabetes. Another 86 million have pre-diabetes and, if they do not change their lifestyle, the majority of them will develop diabetes. Diabetes is most prevalent among seniors: 25.9% of all those 65 and older in the U.S. are diabetic, according to the National Diabetes Statistics Report, 2014.[4]



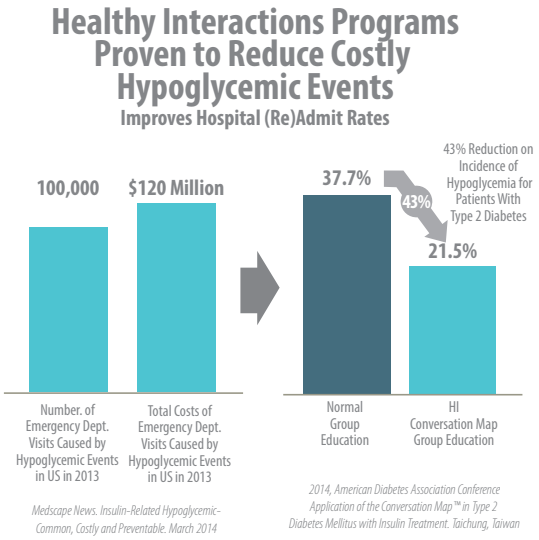
Of the 1.2 billion doctor visits each year in the U.S., between 25% and 40% are by patients who already qualify for reimbursable education. Furthermore, 27.1% of the US population has a body mass index (BMI) of 30 or higher, which defines obesity, and they too qualify for reimbursable obesity education. Yet 95% of diabetes patients are not getting that education.[1] Add to that the vast global population that does not have access to optimal diabetes care. Estimates have this population growing by 55% in 2025, with a 70% growth rate in developing regions.[1]

Healthcare providers have long recognized that new strategies are needed for diabetes education. There is a preponderance of evidence that shows that group diabetes education is more effective than individual education. Traditional group education, however, has been a didactic intervention—a classroom style of one-way flow of information where the educator provides instructional materials and lectures while the patients listen. Diabetes, however, "is a complex chronic disease that requires active involvement of patients in its management," according to the Centers for Disease Control and Prevention (CDC), further emphasizing the unique patient engagement piece of the *Conversation Map* approach.

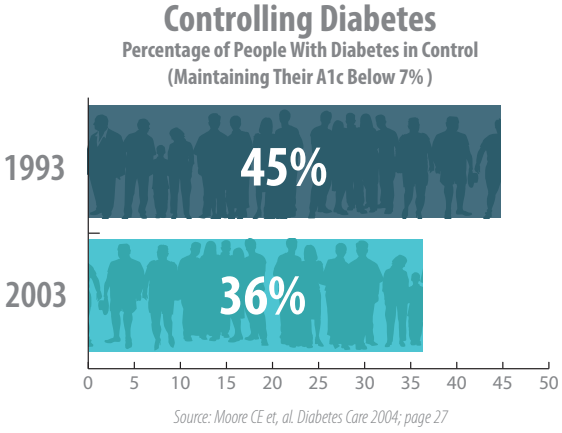
The ADA in 2007 revised its national standards for diabetes self-management education and support (DSME/S) to focus on a more action-oriented style of learning, one that is patient-empowering and conversation-based.[5] The learning map concept has been used for corporate learning purposes for over 30 years but it was not used for disease management until Healthy Interactions, LLC created the diabetes *Conversation Map* education tools in 2005 and first introduced them in Canada. The additional Map programs were developed for healthcare application

in collaboration with the ADA and sponsored by Merck and Co., Inc., in the US.; and in collaboration with the IDF and sponsored by Eli Lilly globally.

Outcome-driven and flexible, the *Conversation Map* approach is built on a foundation of evidence-based education principles and clinical guidelines that include the International Standards for Diabetes Education. When introduced in the U.S., Map tools were recognized in 2007 as meeting ADA Recognition Criteria for a complete DSME curriculum and launched worldwide the next year, beginning with the UK. Now, *Conversation Map* tools are the world's most deployed patient engagement and education program. Millions of people in more than 120 countries have experienced the *Conversation Map* approach guided by more than 60,000 healthcare professionals trained in the application of Map tools.



The *Conversation Map* methodology promotes critical thinking and the responsibility of patients for their own learning and action. The Map tools group model puts patients at the center of the learning process, creating an experience in which they develop personalized self-management solutions unique to their own experiences and challenges. Within the safe environment of their peer group, they are not told how to think or what to do, but are instead encouraged through the Map tools process to think for themselves, to discuss, debate, and discover what is meaningful to them about their diabetes. In so doing, participants are more actively creating ownership of their condition and internalizing management responsibilities that are not apparent through conventional engagement processes. Building self-confidence and skills in problem solving, Map tools promote the acceptance and implementation of the changes that need to be made and the development of a trusting relationship between the educator and the patient.



At the same time, Map tools improve the ability of diabetes educators to connect with patients, influencing their clinical and psychological outcomes. Compared to traditional care group DSME/S, educators report that Map tools increase session attendance, make group facilitating more interactive and engaging, stimulate discussion and enhance peer interaction.

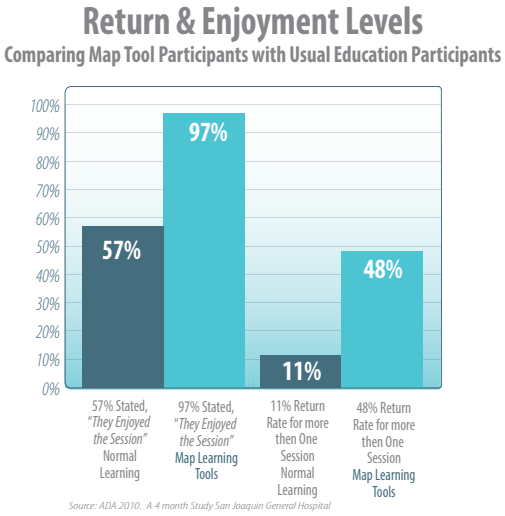
How it Works

The diabetes *Conversation Map* program has a core curriculum of four Map tools that address all of the components and content needs of a person with diabetes (PWD). Each Map tool covers content related to healthy eating, physical activity, self-monitoring of blood glucose, risk reductions, medication taking, coping, and overall situational problem solving. The group size is 3-10 persons. As far as frequency, standard application of the Map tools calls for 1-2 hours at most spent on each Map, with one session every 1-2 weeks.

Sessions are primarily patient-directed discussions and emphasize shared problem-solving in diabetes self-care: troubleshooting blood glucose levels, for example, or exploring the challenges and solutions of motivation for healthy eating and physical activity. In the end, participants receive very tailored, individualized education, but in the comfort of a group setting. Each patient is setting long- and short-term goals that are meaningful to him and in accordance with his diabetes care team.

Information is simple and practical, with its delivery based on adult-learning principles and learner-centered methods. The Map comes with a Facilitator Guide that allows the educator to ask the right questions at the right time to stimulate productive, informative, and meaningful learning. The participants become activated and thus are more likely to follow through with behavior changes. Educators gain new skills related to facilitation and group dynamic management. The results are mutualistic: participants and educators learn from each other. Facilitator/educators listen actively to their patients and can more accurately assess patients' needs and subsequently provide individualized interventions.

All Map tools facilitators are trained the same way, be they in Los Angeles, Hong Kong, Barcelona, or Karachi. Map tools applications do follow clinical guidelines specific to each country and are presented in the appropriate language. However, the standardized methodology is the same and the patient experience is consistent worldwide. Therefore, the participant experience is standardized, and each patient experiences the same level of engagement, though perhaps in a different language.



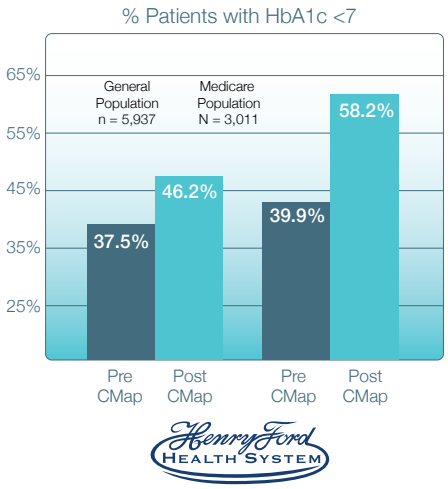
Outcomes

What is the result of applying *Conversation Map* tools to diabetes self-management education? A wealth of research conducted by independent third-party entities in 11 countries validates the efficacy of Map tools in improving people's lives. These studies have been catalogued and the outcomes associated with each have been assessed. They have been categorized, based on the data points included, as clinical, economic, behavior, and attitude. Many studies fall into more than one of these categories. Of the 33 studies that have been collected, 22 are clinical, 2 are economic, 19 are behavioral and 21 concern attitude. Below are results from 13 studies that included data for HbA1c, blood pressure, cholesterol, and/or weight-change measures. Some clinical studies were excluded due to the fact that specific baseline and/or post-study measurements were missing, inhibiting the calculation of percent change. *(Note: Please see the entire research study catalogue for details on each individual study, including those that were excluded from the table below. For details on how this table was constructed, please see the appendix.)*

Attitude Outcomes: Empowerment and Engagement

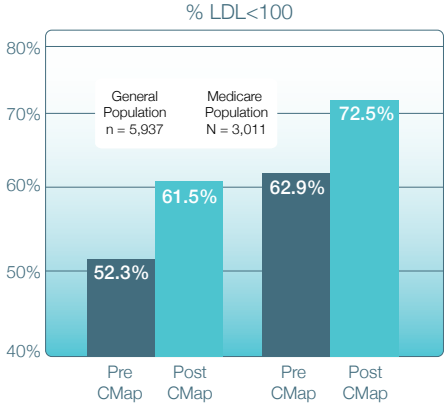
- Comparing Map tools groups with traditional care groups, researchers at San Joaquin Hospital in Stockton, California, found that only 11% of patients in the traditional care groups returned for more than one session, while 48% of patients in the Map tools groups returned for additional sessions. Enjoyment of the sessions was reported by 97% of patients in the Map tools groups vs. 57% in traditional care groups. 91% of patients stated that they learned a lot from Map tools vs. 52% in the traditional care groups.[6,7]

- The Baqai Medical University in Karachi, Pakistan, found significant improvements in patient confidence and empowerment, as well as willingness, ability, and preparedness for diabetes self-managment. Before taking patients through the standard four Map tools sessions, 52% of patients "believed a doctor is responsible for DSME." After Map tools, 97% believed that they themselves carried this responsibility. The proportion who reported that they felt confident managing their diabetes themselves went from 32% to 76%, and the belief in their ability to start making changes grew from 19% to 52%.[8]



Henry Ford Health System

Henry Ford Health Service Study



- The Henry Ford Health System is among many organizations that standard curriculum in diabetes education. Following implementation of Map tools at the Henry Ford Center in Taylor, Michigan, diabetes educators reported that, "Patients have told us that they enjoy the class structure with the Maps and have made friendships and informal support groups outside the classes due to the opportunity of being in a more interactive setting and having the opportunity to get better acquainted with people than in a traditional class setting."[5]

- After offering the Map tools program in 2007, the Rutgers Cooperative Extension in Flemington, New Jersey, found that 97% of participants surveyed by mail rated the overall sessions "valuable" or "very valuable," 98% reported feeling "better able to discuss their diabetes management with their physician," and 96% "rated the format as an 'effective' or 'very effective' way to learn about diabetes." [9]

- Of Map tools educators in the UK, according to a 2011 survey, 93% reported that the sessions stimulated discussion and peer interaction and 84% reported that the sessions made group facilitating more interactive and engaging.[10]

- Of participants in the Rutgers Cooperative Extension study, 94% reported that they were using what they had learned at the training sessions. Skills and behaviors that improved the most included budgeting carbohydrate foods better when having meals and snacks; controlling food portions; reading food labels for carbohydrate and fat content; and discussing health issues with their physician, pharmacist, or other healthcare provider.[9]

- Studies in Japan, Germany, and Spain also found improvement in patients' levels of knowledge regarding diabetes and their motivation for self-care.

Engagement in the *Conversation Map* approach is also sustained by online tools to provide education in between the Map sessions or after. The online education and engagement align with the new DSME/S standards that include an element of support. The majority of self-care management happens outside the classroom where the person with diabetes needs to create habits and behaviors to improve daily metabolic markers. A 2014 study of participants in one major weight-loss program, for example, showed the most weight loss among participants who used online and mobile applications in addition to personal contact.[11] Therefore, Healthy Interactions has added the *Conversation Map* to support goal-setting between Map sessions as well as after DSME/S is completed. Strong evidence indicates that available self-management programs with access to in-person, online, and mobile support improve their outcomes more than those whose patients attempt to try to go it alone.

Behavior Outcomes: Self-care management

- Lotung Poh-Ai Hospital in Taiwan conducted a sub-group analysis of just Map 2: "Diet and Exercise." The analysis showed that metabolic equivalents (mets) increased from 3.3 to 6.3 mets, carbohydrate intake decreased from 10.4 to 9.7 servings per day, and vegetable intake increased from 2.6 to 3.2 servings per day.[12]

- A study in Taichung, Taiwan, found that the Map tools program showed significant improvement in patients' "interpersonal relationships, diet control, exercise control, blood glucose self-monitoring behavior and adherence to the recommend ed regimen." The study concluded: "A three-month intervention of a structured education using *Conversation Map* is more effective than a traditional usual care diabetes education." [13]

- San Joaquin Hospital found that the retinopathy screening rate after Map sessions increased by 210% and foot exam rates increased by 125%.[6,7]

Clinical Outcomes

- At Chung Shang Medical University Hospital in Taiwan, a study comparing the outcomes of traditional groups to Map tools groups found a greater reduction of postprandial glucose and fewer hypoglycemic events in the Map tools groups.[2]

- According to Henry Ford Health System figures, of the US diabetic population, 37.5% have HbA1c <7%, while 46.2% of those who have undergone the Map method have HbA1c <7%. Of the Medicare population alone, 39.9% have HbA1c <7%, while 58.2% among those meeting this measure have been engaged in the Map tools.[5]

- A 2014 report from Taichung, Taiwan, reported a 43% reduction of hypoglycemia incidents from Map tools vs. traditional group education.[10]

- A post-session study of Map tools results in Italy (2010) showed improved glycometabolic control, with fasting glycemia levels decreasing from 152.9 mg/dL to 138.2 mg/dL; a decrease in HbA1c % from 8.2% to 7.8%; and a decrease in BMI from 27.6 kg/m² to 25.5 kg/m².[14]

- A study at Lotung Poh-Ai Hospital in Taiwan used Map tools over a six-month period and found that HbA1c had decreased from 8.1% to 7.6%, while the frequency of self-monitoring of blood glucose increased from 2.1 to 3.2 times per week.[12]

- Patients in Israel with baseline HbA1c measurements greater than 8% showed an average HbA1c reduction of 0.6 increments following Map session participation.[15]

- After Map sessions at South University School of Pharmacy and Tuttle Army Health Clinic in 2009, the researchers reported a 1.05 increment decrease in HbA1c in 85% of their participants and a 0.05 increment increase in HbA1c in 15% of participants while maintaining their HbA1c at less than 7%. Other

clinical measurements reported include a 42 mg/dL average decrease in cholesterol in 70% of participants, a 114 mg/dL average decrease in triglycerides in 75% of participants, a 11 mg/dL average increase in high-density lipoprotein (HDL) in 55% of participants, and a 29 mg/dL decrease in low-density lipoprotein (LDL) in 55% of participants.[16]

- According to a Portuguese study, "consistent decrease in HbA1c, achieved independently of weight loss, hints to the impact of sharing solutions among peers by boosting diabetes acceptance, well being and development of autonomy with DSME." [17]

- A study at Chobu Rosai Hospital in Japan found improvement of HbA1c from 9.6% to 7.6% after three months of Map tools sessions, as well as significant improvement of patient knowledge and motivation.[18,19]

- At San Joaquin Hospital in Stockton, California, where patients engaged in Map sessions over a four-month period, patients showed a 0.5 increment reduction in Hb1Ac.[6,7]

The fact that DSME/S improves the metabolic outcomes of diabetes patients is well-known. A 2014 report by the Australian Diabetes Educators Association showed that DSME/S in Australia had produced an average 0.33 increment reduction in HbA1c, with improvement demonstrated in other measures such as diabetes-related disabilities, patient and career productivity, secondary complications and quality-adjusted life years.[20]

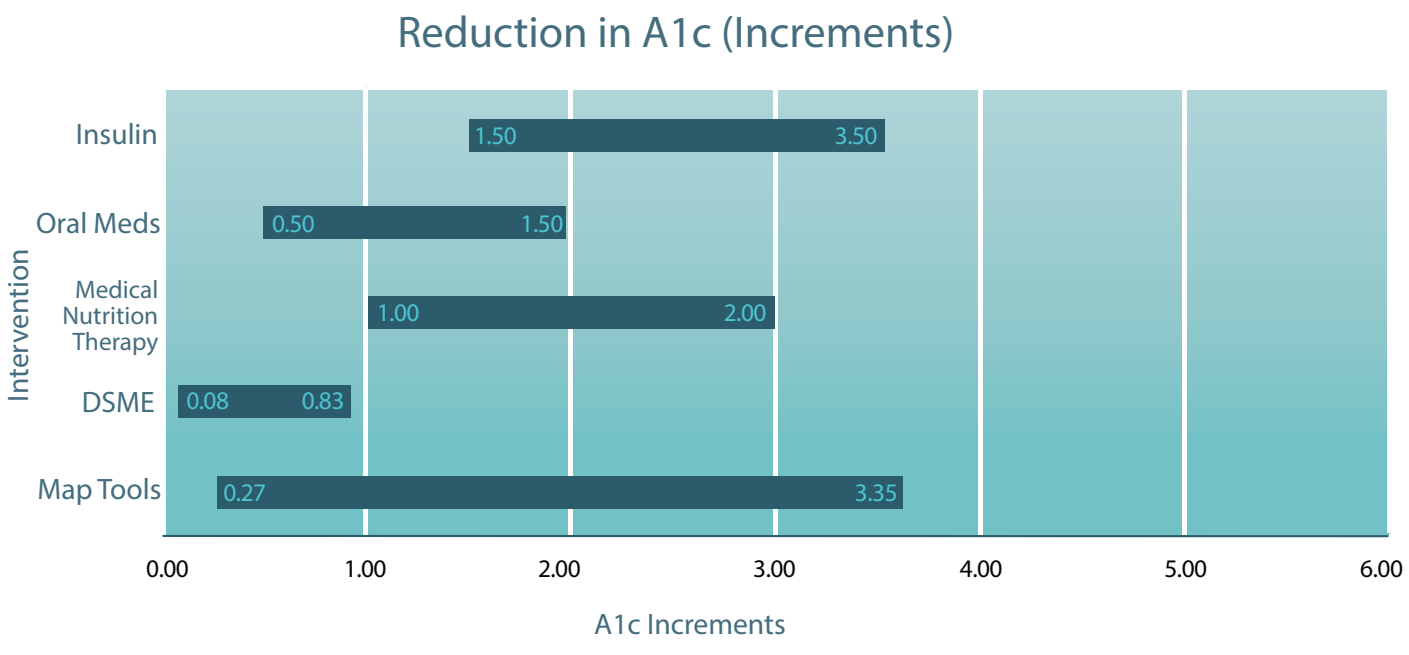
Utilizing the 0.33 increment weighted average reduction in HbA1c (range of 0.08 to 0.83) referenced in the 2014 report by the Australian Diabetes Educators Association as a comparator, the Map tools studies described above demonstrate HbA1c reduction outcomes in the range of 0.27 to 3.35 increments. Map tools HbA1c reduction outcomes are also comparable with those of anti-diabetes medications (excluding insulin), which reduce HbA1c by 0.5 to 1.50 increments.[21] Medical nutrition therapy (MNT) reduces A1c in the range of 1.0 to 2.0 increments[22], while insulin realizes an A1c reduction of 1.5 to 3.5 increments.[21]

Cost Outcomes: Direct and indirect cost effectiveness

Quite simply, better outcomes lead to lower costs. When people with chronic diseases— diabetes or any other medical condition—have their clinical markers under control, the cost to the social system is significantly reduced.

The social costs of diabetes and its comorbidities, including, but not limited to, retinopathy, chronic kidney disease, amputations, and coronary heart disease, are substantial. In the U.S. alone, direct medical costs related to diabetes totaled $176 billion in 2012, with productivity loss measured at an additional $69 billion, according to the ADA.[23]

In the U.S in 2014, there were 100,000 hospitalizations due to hypoglycemic events, costing approximately $120 million.[24] On average, patients who cannot successfully manage their disease cost the healthcare system $44,490 per patient on an annual basis, according to ADA figures, while those who have their diabetes under control cost, on average, $13,234 per patient per year.[25] DSME/S can substantially reduce such cost burdens. The 2014 report by the Australian Diabetes Educators Association made clear the economic benefits of offering the services of credentialed diabetes educators to people with diabetes. It showed that "Australian healthcare



cost savings in 2014 would have totaled an extraordinary $3.9 billion and thousands of lives would improve if diabetes education were made available to all Australians." Every dollar spent on diabetes education would generate a savings of more than $16 in healthcare costs. The average cost of $173 per year to provide diabetes education would deliver average healthcare cost savings of $2,827, or 93.9%.[20]

Discussion

Diabetes education has evolved from being teacher-centered and content-driven to being more learner-centered and learning-process-driven. The *Conversation Map* education tools' success derives from the principle that the solutions to behavior change needed to improve health outcomes are dependent on patient activation, or the extent to which the patient is engaged in the program and thus motivated to seek healthier behavior. Built on a foundation of evidence-based education principles and clinical guidelines, the Map approach is designed to be outcomes-driven and flexible. The *Conversation Map* tools can be adopted by institutions ranging from small neighborhood clinics to large regional health systems, and they can be integrated into existing support programs at any stage of diabetes management.

From Australia to the UK, the US, Pakistan, and Taiwan, independent studies in countries where Map tools have been used show improved engagement of diabetics in the learning process, patients' knowledge regarding their disease, and their understanding of and adherence to diabetes self-management. Also, improvement is seen in their attitudes toward and willingness to participate in group education and their record of completing group education and training, in addition to dramatic improvements in clinical outcomes.

Most compelling about these studies is that each was developed and deployed by an independent healthcare provider (HCP). These HCPs reported on what was most meaningful to them from their Map tools experience and what information was required in order to facilitate the program effectively. In Israel, for example, the positive improvements seen in clinical outcomes[15] were the basis for choosing Map tools as a requirement for care in that country's largest sick fund. In this particular health system, each patient with diabetes is eligible to attend Map sessions provided by skilled nurse educators. In the UK, for another example, Map tools were compared to a national standard curriculum called DESMOND (Diabetes Education and Self-Management for Ongoing and Newly Diagnosed).[26] This particular study found that Map tools deliver comparable clinical, but more cost-effective, results.

Certainly, DSME/S standards are the same around the world, but their delivery varies. Consequently, the independent studies on the efficacy of the Map tools program currently available utilized a variety of metrics and measured deliverables that met their unique needs, limiting the ability to combine the results and evaluate the data in a meta-analysis type of model. Research is lacking in this category. Healthy Interactions, LLC encourages third-party researchers to further explore the economic implications of Map tools for patients, providers, payers, purchasers, and the healthcare system as a whole. With a constantly evolving healthcare environment in the U.S. with diabetes as a leading disease in terms of disease prevalence and costs, Healthy Interactions, LLC recognizes the importance of achieving the Institute for Healthcare Improvement's Triple Aim of high quality healthcare, lower costs, and improved population health.[27]

Of the 33 studies now available, two are clinical randomized control trials (RCTs), which is the gold standard for research design. They include the IDEA (Interactive Dialogue to Educate and Activate) study, which focused on diabetic populations in Minnesota and New Mexico[28], in addition to a European study involving patients in Germany and Spain.[29] When comparing traditional diabetes education to Map tools diabetes education, neither of these studies found significant differences between the control and intervention groups. Both studies, however, highlight important points. Map usage that is consistent with the realities and limitations of accurately assessing the impact of DSME incorporates multiple variables that need to be adjusted for when evaluating statistical significance and determining which variables are contributing factors that impact results. As a result, both of these RCTs created more questions than answers.

The best practices learned from the two RCTs include, but are not limited to: materials outside of the Map tools overwhelm participants with too much information. The Map itself is enough to convey needed content. Further, since each patient is learning what is meaningful to him or her—they are not learning the same things—knowledge tests will not accurately reflect what they have learned. All patients who enrolled in the studies (both control and intervention groups) are more likely to be engaged in their care because they are already seeking help for managing their diabetes. They do not necessarily reflect the general population, where patients do not have access to diabetes care and are less engaged in their care. Each of the RCT sites is continuing to use the Map tools at their centers, as the Map tools deliver on their program and patient needs.

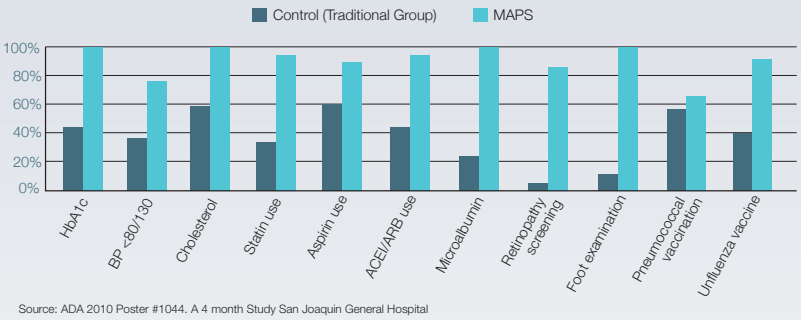
Five program deployment options:

1. *In-person, small-group sessions facilitated by an HCP*
2. *In-person, 1-on-1 sessions (patient and HCP)*
3. *Digital, live group sessions facilitated by an HCP*
4. *Digital, self-paced eLearning*
5. *Digital through our app as a complement to the in-person education*

A primary strength of Map tools is that they are most effective when applied to underserved and previously unengaged populations. The Map use does not require educators to have advanced skills, making it very inclusive and allowing educators to build additional expertise in diabetes education as they gain experience facilitating the program. Map tools are also bringing patients back to subsequent sessions as the patients establish the peer support needed to motivate them to return. Since Map sessions are fun, engaging, and include an element of peer support, the return rate is high.

"Lack of insurance coverage has previously been identified as a barrier to DSMT participation," according to the CDC. A cap of thirty individual or traditional group diabetes education sessions are typically offered in hospitals or clinics, limiting its accessibility. The vast majority of the global diabetic population may be blocked out by challenges related to access, costs and inadequate insurance or total lack of insurance.

Groups visiting using *Conversation Maps*® as a Better Model for Driving Behavior Changes and Clinical Outcomes



Source: ADA 2010 Poster #1044. A 4 month Study San Joaquin General Hospital

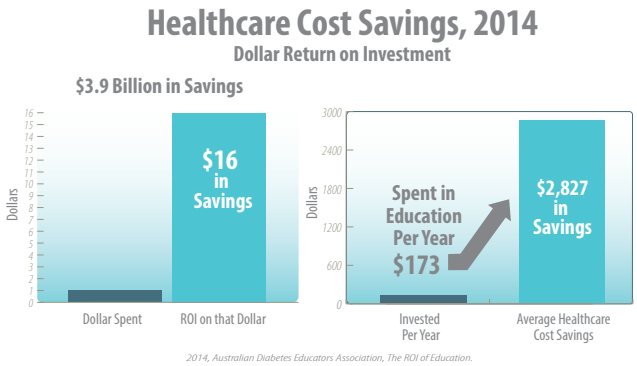
According to the IDF, worldwide, only 5% of people with diabetes receive optimal care.[1] A primary goal of the Map programs is to create access to diabetes education. The less access patients have had to diabetes self-management education, the less developed their knowledge, skill and abilities in diabetes self-management. Consequently, Map tools have a larger impact on patient activation, empowerment, knowledge and clinical improvement. In addition, DSME/S has proven to be dose-dependent. The more frequently people engage in DSME/S, the better their outcomes.

An analogy can be found in how the effect of DSME/S on blood glucose differs according to the blood glucose level patients have at baseline. For example, a study by Clalit Health Services in Israel found that Map tools produced no change in HbA1c in patients with HbA1c less than 8%, but produced a 0.60 increment decrease in HbA1c in patients with HbA1c greater than 8%.[15]

Another important feature of *Conversation Map* tools: While over 27,000 diabetes educators have been trained on its use in the US, there are only about 18,000 Certified Diabetes Educators (CDEs) nationwide. The Healthy People 2020 objective is to increase diabetes education by 10% to a goal of 62% that needs to be delivered by skilled diabetes educators.[30] Map tools can be a powerful driving force toward the Healthy People 2020 objective to "Increase the proportion of persons with diagnosed diabetes who receive formal diabetes education." Healthy Interactions, LLC is contributing to that goal by providing diabetes educators Map tools and skills needed to provide formal and structured diabetes education, therefore being the solution for the shortage of CDEs in the US. To meet this need, Healthy Interactions, LLC has trained an additional 9,000 diabetes educators including nurses, dietitians,

pharmacists, doctors, and physician assistants.

For the diabetes population that does not already receive optimal care, a trained Map tools facilitator can achieve good outcomes for patients without being an advanced-level diabetes clinician. Surveys indicate that 80% of diabetes educators say that Map tools make group facilitating more interactive and engaging, 63% say it increases patient interest in diabetes education and 54% respond that they have seen improved patient compliance and outcomes.[31]



Independent research studies such as the examples given herein have demonstrated, as described by the researchers at Lotung Poh-Ai Hospital in Taiwan, that "the Diabetes *Conversation Map* are...effective and interactive tools through the power of peer conversation to facilitate and reinforce behavior changes of diabetes self-management. We shall continue to carry forward and broadly apply in clinical practice."

Conclusion

Historically, the interaction between healthcare providers and their patients has been one of great trust and respect, in which the provider would explain to the patients their conditions and recommend a course of action. As chronic conditions have become more prevalent in the population, and people with diabetes continue to live even longer lives than in previous generations, this method of disease management is no longer appropriate. Since clinicians cannot cure diabetes, how can they manage their patients with diabetes so that they are empowered to make the right decisions for themselves?

As in the old story of teaching people to fish rather than simply giving them fish, if patients are simply told what to do, they can never become independent and able to manage their own health. Focusing on behaviors, *Conversation Map* tools leverage the power of groups and of learning, from peers in similar circumstances, about what does or does not work. Map tools help healthcare providers learn how to ask the right questions at the right time, engage patients in applying what they have learned, and assist them in choosing the self-care paths that are optimal for them as individuals, thereby improving their physical and emotional well-being.

Study after study in different countries, measured in a variety of ways, has demonstrated that the *Conversation Map* method drives value for patients, healthcare educators, governments, and other entities with financial responsibility for patient populations, proving to be a cost-effective solution for improving the lives of those living with diabetes.

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Clinical Data Table Appendix

Column 1 indicates the study's catalog ID, which can be used to look up the study details in the actual catalog (available upon request).
Columns 2, 4, 5, and 6 display the results by study for HbA1c, blood pressure (systolic and diastolic separately), cholesterol, and weight change, respectively. Cells in these columns with "—" indicate that no results were available for that specific measure.
Column 3 provides the change in HbA1c. The numbers are reported as percent change based on the baseline and post-study measurements as seen in Column 2. Negative numbers indicate a reduction in HbA1c (ideal outcome) while positive numbers indicate an increase in HbA1c (undesired outcome), while lack of a sign indicates a net change of 0. "?" indicates that baseline and post-study data are not available, and thus could not be calculated.

Methodology: Calculations were made simply by subtracting the post-study measurement from the baseline measurement. For example, for R-ISR-2, for all patients the baseline measurement was 7.8% and the post-study measurement was 7.6%. The difference is -0.2 percentage points because the HbA1c was reduced by 0.2 percentage points. This is reported as -0.2% in Column 3 but should be interpreted as a reduction of 0.2 percentage points.
All Columns: "p = 0.##" indicates the *p* value as a test of statistical significance. Generally, a *p* value of less than 0.05 indicates statistically significant results. "n.s." indicates that the *p* value is greater than or equal to 0.05 and thus is not significant.

Glossary

Abbreviations

ADA: American Diabetes Association
BMI: Body Mass Index
CDA: Canadian Diabetes Association
CDC: Centers for Disease Control and Prevention
CM: Conversation Maps (also referred to as Map Tools)
DESMOND: Diabetes Education and Self-Management for Ongoing and Newly Diagnosed
DSME/S: Diabetes Self-Management Education and Support
DSME: Diabetes Self-Management Education
HbA1c: Hemoglobin A1c (clinical metric for blood glucose)
HDL: High-density lipoprotein (clinical metric for "good' cholesterol)
HCP: Healthcare Professional
IDF: International Diabetes Federation
LDL: Low-density lipoprotein (clinical metric for "bad" cholesterol)
MET: Metabolic Equivalent
PWD: Person with Diabetes
RCT: Randomized control trial (gold standard for clinical trial research design)
WHO: World Health Organization

Terms further defined

Usual-care group: study participants who serve as a control and receive a type of care that is something other than the intervention being studied

HbA1c reduction: reported as percentages but is differences in percentage points

Clinical Data Table Appendix

Study ID	HbA1c *	Change in HbA1c (percentage points)	Blood Pressure	Cholesterol	Weight Change
R-AUS-1 (Australia	6.7% improvement (n=?, p=0.0092)	– –	– –	– –	– –
R-ISR-2 (Israel)	For all patients, A1c decreased from baseline 7.8% to post-study 7.6% (n=99, p=0.06; n.s.); for patients with baseline A1c >= 8%, A1c decreased from baseline 9.4% to post-study 8.8% (n=63, p= 0.022);for patients with baseline A1c < 8%, A1c remained relatively constant (n=36, p=0.67; n.s.)	-0.2% for all patients (n.s.); -0.6% for patients with A1c >= 8%; 0.0% for patients with A1c < 8% (n.s.)	– –	– –	– –
R-ITA-1 (Italy)	Baseline 8.2% +/- 1.2 to post-study 7.8% +/- 1.4 (n=63, p<0.01)	-0.4%	– –	– –	BMI baseline 27.6 kg/m2 +/- 15.1 to post-study 25.5 kg/m2 +/- 15.5 (p<0.02)
R-ITA-2 (Italy	MapTools + weight loss group baseline 7.1% +/- 0.7 to post-study 6.6% +/- 0.6 (n=21, p=0.04); MapTools only group: baseline 7.4% +/- 0.8 to post-study 6.8% +/- 0.8 (n=22, p=0.02)	-0.5% for MapTools + weight loss group; -0.6% for MapTools only group	– –	– –	MapTools + weight loss group baseline 87 kg to post-study 84 kg (p<0.001); MapTools only group: baseline 80.5 kg to post-study 80 kg (p>0.05; n.s.)
R-JA-1	Baseline 9.6% to post-study 7.6% (n=83, p<0.01)	-2.0%	Systolic: baseline 138.9 mmHg +/- 1.8 to post-study 140.56 mmHg +/- 17.1; Diastolic baseline 80.8 mmHg +/- 8.0 to post-study 81.04 mmHg +/- 10.9		– –
R-TAI-1 (Taiwan)	Baseline 10.84% +/- 1.96 to post-study 7.49% +/- 1.05 (n=51, p<0.05)	-3.35%	– –	– –	Baseline 69.61 kg +/- 15.21 o post-study 72.34 kg +/- 15.37 (p<0.05)
R-TAI-2	Baseline 8.1% to post-study 7.6% (n=125, p<0.0001)	-0.5	– –	– –	– –
R-UK-1 (United Kingdom)	Baseline 8.6% +/- 2.1 to post-study 7.0% +/- 1.0 (n=34, p=?)1)	-1.6%	Systolic: baseline 138.9 mmHg +/- 1.8 to post-study 140.56 mmHg +/- 17.1; Diastolic baseline 80.8 mmHg +/- 8.0 to post-study 81.04 mmHg +/- 10.9	Baseline 5.1 mg/dL +/- 0.9 to post-study 4.3 mg/dL +/- 0.7	BMI Baseline 31.20 kg/m2 +/- 5.1 to post-study 30.53 kg/m2 +/- 5.0
R-USA-1	Reduction of 0.27 percentage points (n=243, p=0.008)	-0.27%	– –	– –	– –
R-USA-3	Patients with A1c < 7% who had glycemic control increased 8.7 percentage points in the general population and 18.3 percentage points in the Medicare population (n=?, p=?)	-3.35%	– –	Patients with LDL < 100 who had lipid control increased 9.2 percentage points in the general population and 9.6 percentage points in the Medicare population	– –
R-USA-6	Reduction of 0.5 percentage points (n=112, p=?)	-0.5%	– –	– –	– –
R-USA-11	Reduction of 0.4 percentage points (n=59, p=0.004) at 3 months, Reduction of 0.3 percentage points (n=59, p=0.07; n.s.) at 6 months, Increase of 0.04 percentage points (n=58, p=0.8; n.s.) at 12 months	-0.4% at 3 months; -0.3% at 6 months (n.s.); +0.04% at 12 months (n.s.)	– –	– –	Baseline 34.6 kg/m2 +/- 7.0 to post-study 34.4 kg/m2 +/- 7.5 (p=0.63; n.s.)
R-USA-12	Reduction of 0.44 percentage points (n=11, p=0.22; n.s.)	-0.44%(n.s.)	SySystolic: 4.3 mmHg decrease (p=0.14; n.s.); Diastolic: 2.5 mmHg decrease (p=0.15; n.s.)	– –	– –

* Numbers reported are change in HbA1c, as measured by the percentage point difference between the baseline and post-study values.

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