



Market Survey

If blood sugars are rising click here....

Perceptions on ways to improve diabetes management in primary care settings



July 2014

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ACKNOWLEDGEMENTS

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Executive Summary

Today there are 30M diabetics in the US, or 10% of the population. The disease costs \$245B annually. 86% of diabetics do not meet the recommended targets for glycemic control, blood pressure, LDL cholesterol level, and tobacco use. With 79M Americans having pre-Diabetes the societal burden of this disease will only get worse. Today primary care physicians (PCPs) are delivering much of the diabetes care. Growing prevalence of diabetes will require PCPs to do even more, including better addressing the disease's clinical as well as its behavioral elements.

This analysis surveyed 100 primary care providers on the challenges they face managing diabetes, as well as their interest in new tools and service which could make it easier. Key survey results were:

- **The diabetes burden is immense and is borne by primary care.** Respondents estimated that 30% of their patients on average have diabetes, well above the population prevalence overall. 78% of surveyed PCPs said they provided “almost all” or “most” of their patients’ diabetes management, with another 8% sharing it equally with specialists.
- **Bigger practices do somewhat more diabetes management than smaller ones, and have more tools to do so.** 83% of large groups (more than 10 doctors) say they deliver the bulk of their patients’ the diabetes care, versus 70% for one- and two-doctor practices. While EMR use was high for all providers, groups with more than 10 providers were much more likely to have onsite Certified Diabetes Educators and employ clinical decision support technology than smaller practices.
- **Patient motivation is the biggest challenge to improving diabetes care.** 77% of providers identified motivating patients to improve self-management as a top challenge for diabetes care. Monitoring patient compliance, educating patients on the disease, assessing patient understanding, and medication selection also ranked highly (between 18% and 39% of respondents.)
- **More onsite resources, combined with patient non-compliance alerting, are seen as the most promising additions for improving diabetes care.** Over half (55%) of physicians said more onsite resources was a top means of improving diabetes care. 44% said alerts when their patients are not compliant with their treatment plan would also be valuable.
- **Providers were particularly interested in more onsite Certified Diabetes Educators (CDEs) and Nutritionists. They are willing to have them “virtually” onsite.** 85% of providers stated that, putting cost aside, more onsite CDEs would be “very” or “extremely useful.” 78% said the same of Certified Nutritionists. 54% of providers said they would be at least somewhat supportive of having these providers available via video-chat technology, with another 30% saying they would “consider it.”
- **Many providers would at least consider investments in improved diabetes care.** 71% of providers surveyed said that their organization would at least consider making investments in new diabetes management tools & services if they markedly improved quality, increased revenues, or reduced population health costs. The receptivity to consider investment appeared unaffected by the reimbursement method the provider practiced under.

While a small survey in terms of scope and sample size, the data suggests that providers are open to exploring new tools & services for providing diabetes care.

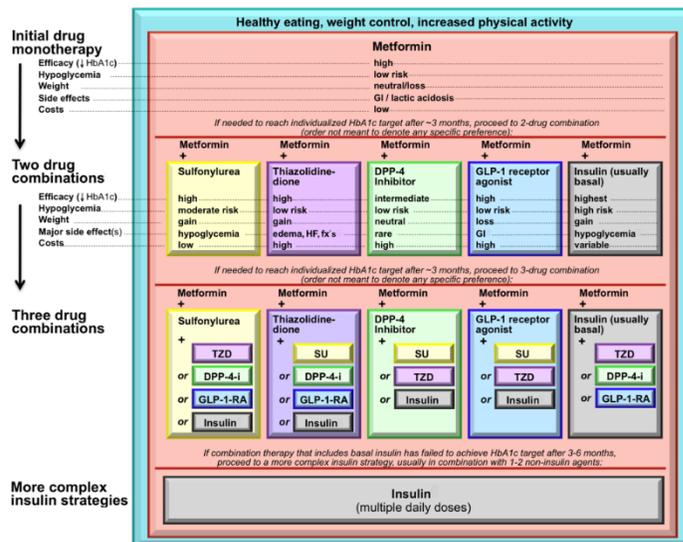
The Diabetes Epidemic—Why This Survey

By almost any metric, cost, volume, morbidity, reduction in quality-adjusted-life-years, diabetes mellitus represents one of the biggest challenges facing US Healthcare. Today there are 30M diabetics in the US, or 10% of the population. The economic cost of the disease is \$245B per year.ⁱ With 79M Americans with pre-Diabetes,ⁱⁱ the burden will only get worse. According the CDC 1 in 3 US adults could have diabetes by 2050 if current trends continue.ⁱⁱⁱ

Type II Diabetes is a hard disease to manage for any provider. Firstly, effective disease control requires an exceptionally high level of patient involvement. Patients must adhere to complex medication regimens, must extensively self-monitor weight, blood sugars, and/or caloric intake, and must make significant lifestyle modifications. While Hemoglobin A1C and other point-of-care testing makes the diagnosis of diabetes relatively straightforward, the medical management is anything but. Goal setting alone requires assessing at least seven patient attributes, including patient attitude, diabetes related complications, comorbidities, hypoglycemic and other risks, and patient support systems.^{iv} Treatment options are even more complex, with mono-therapy, two-drug, and three-drug regimens available even before the initiation

of insulin. (See Figure 1: Antihyperglycemic Therapy in Type II Diabetes.)

FIGURE 1: NON-INSULIN THERAPY OPTIONS FOR DIABETES.



While endocrinologists and diabetologists have specific training and dedicated resources to address these challenges, it is not practical to refer out all cases. Per the Endocrine Society (2008) “There are some 4,000 M.D. endocrinologists to care for approximately 25 to 100M patients who might reasonably wish to be seen by one.”^v That is 6,000 to 25,000 patients per endocrinologist. Serving this volume is a physical impossibility. Diabetes must be principally a primary care managed disease.

Not surprisingly, treating diabetes in the primary care setting is not easy. In a cross-sectional study of 95 primary care physicians, Spann et al. found, “Only modest numbers of patients achieve established targets of diabetes control. Reengineering primary care practice may be necessary to substantially improve care.”^{vi} In general, 86% of diabetics do not meet the recommended targets for glycemic control, blood pressure, LDL cholesterol level, and tobacco use.^{vii} New models of care are strongly suggested.

To overcome the challenges of effective diabetes management in primary care settings many physicians have explored various technological and care model innovations. Notably among these are disease registries, clinical decision support solutions, remote patient monitoring, embedded ancillary care providers with specific diabetes expertise, and tele-medicine.^{viii} The goal of this survey was to collect preliminary data on the challenges clinicians are facing in managing diabetes, and their perceptions of how select technologies and services could help. Of particular interest was reactions to using video-conferencing technology for Diabetes education, similar to the work of Izquierdo et al. (2003)^{ix} and Davis et al. (2010).^x

Survey Methods & Limitations

This report summarizes the results of a 13-question Internet-delivered survey conducted of US primary care physicians during June/July 2014.

After piloting the survey instrument with 5 primary care providers (whose data was not included in the analysis) respondents were recruited online by the firm Survey Monkey^{®.xi} Survey Monkey relies on user self-attestation of their profession. The Firm does not validate that the respondents are in fact physicians as they may claim to be. In exchange for taking the survey, Survey Monkey offered to make a \$0.50 charitable donation for each completed survey response, and enter each respondent into a drawing for a chance to win a \$100 cash prize. No other compensation was offered—thus reducing, but not eliminating, the incentive of a respondent to misrepresent him/herself as a physician.

Participants were informed upfront that the survey was intended for currently practicing US primary care physicians. They were then asked “What type of physician are you?” Only those that selected “Internal Medicine (practicing primary care)” or “Family Medicine” were included in the results. Those that said “Pediatrician”, “I am not a Physician,” or “Other Specialty (please specify)” were excluded. A total of 603 people initiated the survey on Survey Monkey, including 44 “Internal Medicine (practicing primary care)” and 66 “Family Medicine” respondents. Of these 110 total eligible participants, 100 physicians completed all 13 questions, categorized into the following sets:

1. Current Diabetes Workload,
2. Challenges in Managing Diabetes,
3. Improving Efficacy & Efficiency of Diabetes Management,
4. Practice Size & Reimbursement, and,
5. Willingness to Invest.

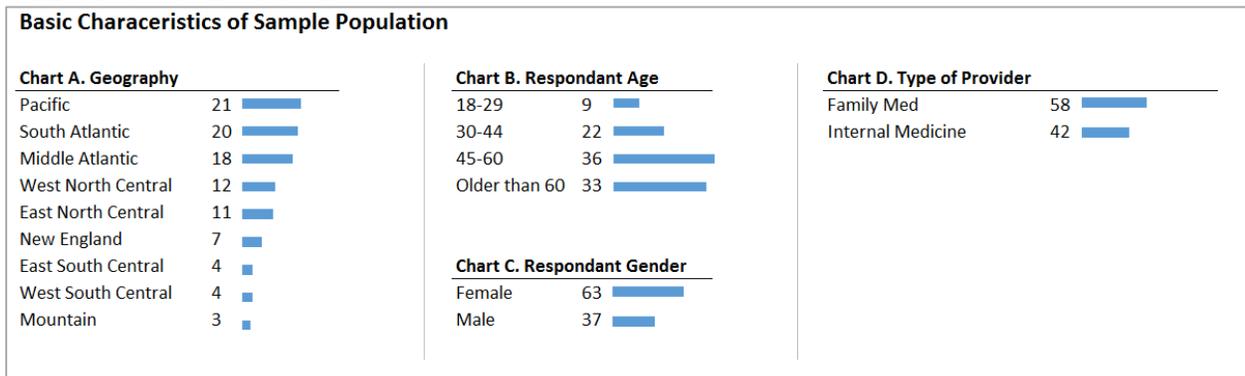
All analyses presented in this report are based solely on the 100 completed responses.

Despite the high disqualification rate and limited financial inducements to participate, it is possible some respondents included in the analysis did not in fact meet the inclusion criteria, i.e., they misrepresented themselves as primary care doctors. More importantly, the nature of being an opt-in only, Internet-only survey clearly introduces a skew in the sample vis-à-vis the population of physicians as a whole. As the survey was intended to be directionally informative— not drive policy or decision making nor be formally peer-reviewed— these limitations were deemed acceptable. **However, readers are encouraged to critically review the findings themselves and make their own determination of the data’s utility.**

Characteristics of the Sample Population

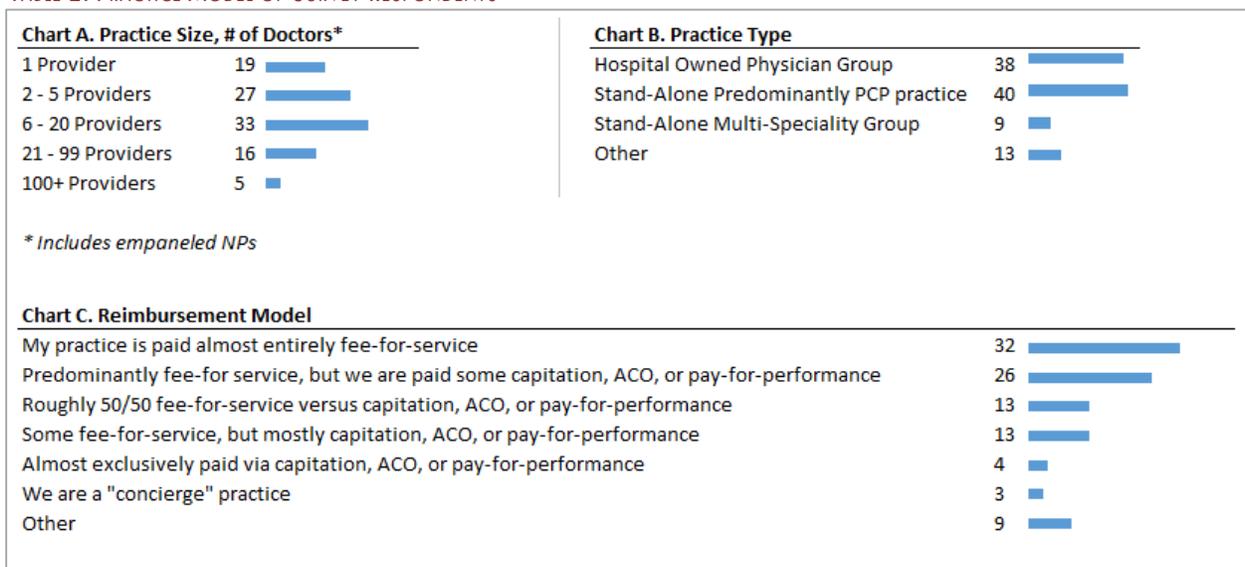
As previously noted, the survey was intended solely for US primary care physicians. Participants were recruited online by Survey Monkey. No effort was taken to balance respondents in terms of location, size, or any other criteria. Despite this there does appear to be at least a reasonable degree of geographic, gender, and provider type randomization. (See Table 1.)

TABLE 1: BASIC SAMPLE CHARACTERISTICS



One hypothesis was that practice size, ownership structure, and reimbursement methods may impact provider attitudes towards innovation. Table 2 shows the survey had some representation among both large and small practices. The average practice size was 19 providers. (Providers includes physicians and empaneled nurse practitioners.) Most respondents were in either a standalone predominantly primary care practice (40%) or a hospital-owned practice (38%). A fraction were part of a multi-specialty practice (7%). The "other" included the VA, other governmental providers, correctional facilities, and urgent care centers. Perhaps most surprising, many of these providers operated in reimbursement constructs beyond fee-for-service. Only 58% of the participants suggested that fee-for-service was their exclusive or predominate payment method.

TABLE 2: PRACTICE MODEL OF SURVEY RESPONDENTS

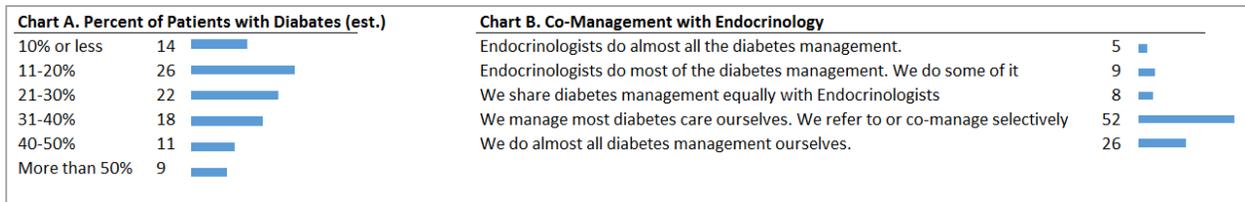


Of the 97 respondents who provided an estimate of their diabetic patient population, the average stated that 30% of their patients had the disease. (See table 3.) This is above the overall population incidence. However, this is not that surprising for at least four reasons: (i) people who see primary care providers are

on average sicker than the population as a whole, (ii) some providers may have included pre-diabetics in their estimate, (iii) providers with small diabetic populations may have been less inclined to take a survey on diabetes management, and (iv) there was likely some form of recollection bias introduced by the question phraseology.

The surveyed doctors stated they provide the bulk of their patients' diabetes care. 78% of surveyed physicians provided "almost all" or "most" of the diabetes management, with another 8% sharing it equally with specialists.

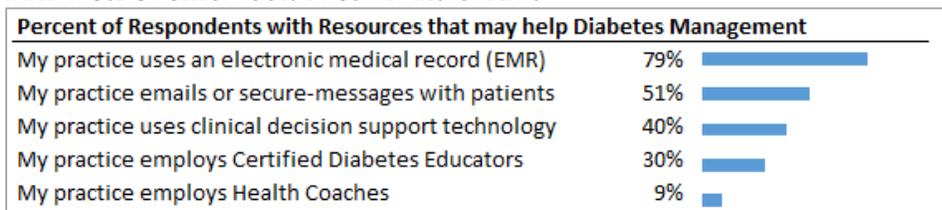
TABLE 3: DIABETES BURDEN AND USE OF ENDOCRINOLOGY



Finally, the vast majority of physicians, 79%, reported using an EMR. (See Table 4.) This was expected. Per the CDC, by 2012 72% of office-based physicians had at least some type of EMR/EHR, with use by primary care higher than other types of providers.^{xii} Of the 79 EMR users, 30 reported using some form of clinical decision support technology, as did 10 non-EMR users. 51% of providers said their practice emails or securely messages with patients. As early as 2008, almost 35% of physicians had patient messaging capabilities, although their use was typically infrequent.^{xiii} Thus, 51% six years later seems directionally consistent with expectations, especially as the survey was delivered exclusively online.

Regarding ancillary use, 30% of providers reported using Certified Diabetes Educators (CDEs), and 10% using Health Coaches. The use of CDEs was surprisingly high, but likely driven in part by the relatively large average practice size of the respondents (19 providers per practice) where there was sufficient volume and scale to invest in these resources.

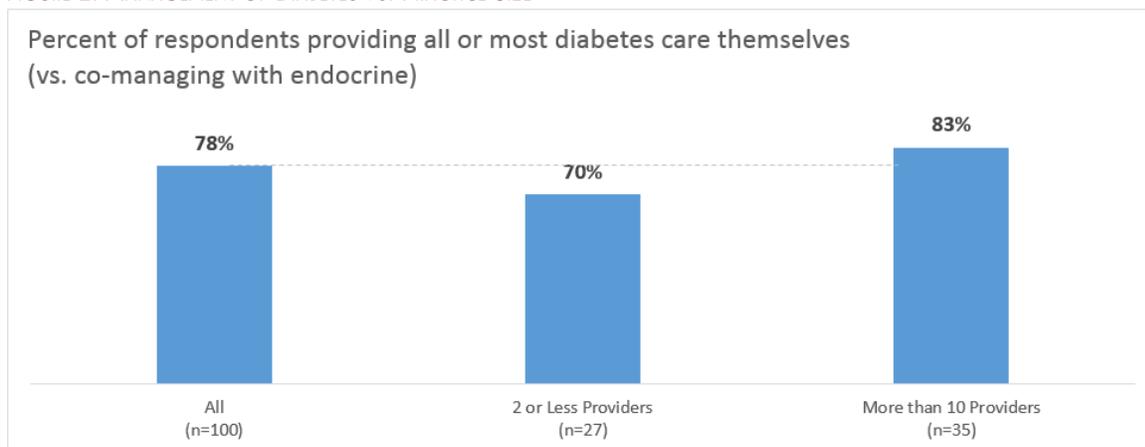
TABLE 4: USE OF SELECT TOOLS BY SURVEY RESPONDENTS



Finding #1: Size Seems to Matter... Bigger practices manage more diabetes and have more tools to do so

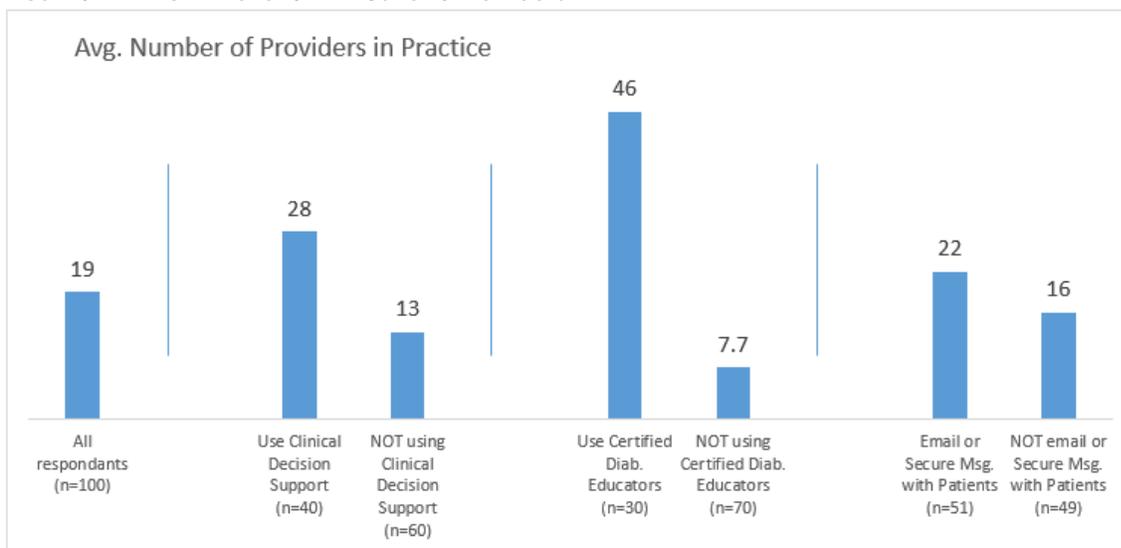
First and foremost primary care physicians are providing the bulk of diabetes care. However, as alluded to above, practice patterns of large and small providers do differ somewhat. 83% of providers working in larger groups report that they provide the vast majority of the diabetes care themselves, compared with 70% in solo- or two-provider practices. (See Figure 2.)

FIGURE 2: MANAGEMENT OF DIABETES VS. PRACTICE SIZE



EMR use was high among all providers, 79% of the sample population. Use of patient electronic messaging, while less pervasive at 51% of the population, was also relatively consistent. However, use of clinical decision support technology as well as employing ancillary providers varied significantly based on group size. The average practice size in the sample population overall was 19 providers. The average practice size of those using Clinical Decision Support (CDS) and Certified Diabetes Educators (CDEs) were 28 and 46 providers, respectively. (See Figure 3.)

FIGURE 3: AVERAGE PRACTICE SIZE BY USE OF SELECT TOOLS

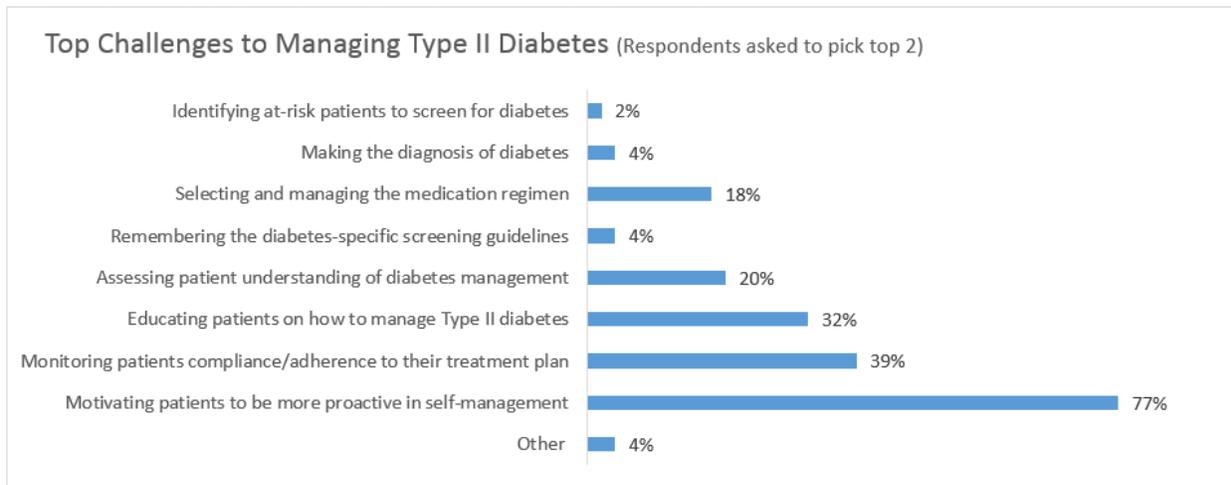


Taken together, there appears to be some willingness of larger groups to provide more diabetes care, and to use more complex tools to do so.

Finding #2: Doctoring would be easier if not for the patients... Biggest challenges are patient motivation, monitoring & education

When asked to select their Top 2 Challenges for “effectively & efficiently managing type 2 diabetes,” the answer was clear—the patient. 77% of providers selected “motivating patients to be more proactive in self-management” as a top-2 challenge. This was almost 2X the next response, “monitoring patients’ compliance/adherence to their treatment plan,” (39%). It was more than 2X both “educating patients on how to managed Type II diabetes,” (32%) and “assessing patient understanding of diabetes management” (20%). Actual clinical decision making ranked 5th in terms of biggest challenges, with 18% citing “selecting and managing the medication regimen” as a top-2 challenge. Less than 5% ranked diabetes-specific screening guidelines, making the diagnosis, or identifying at-risk patients as a major issue.

FIGURE 4: CHALLENGES TO EFFECTIVELY & EFFICIENTLY MANAGING DIABETES



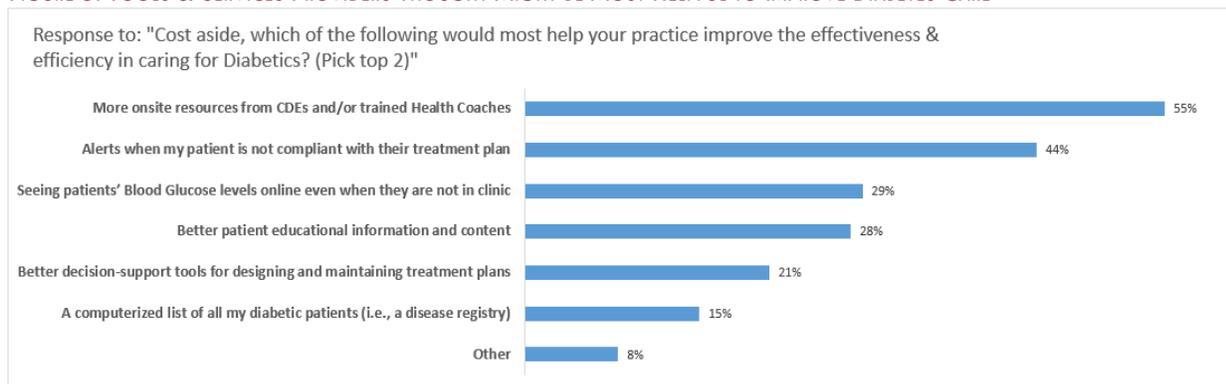
On net, this data suggests a significant disconnect between physician training and the needs of effective diabetes management. Perhaps more precisely, it shows that physicians can provide the medical management, but need help with the patient engagement and activation.

While patient motivation certainly stands out, the other expressed challenges were significant as well. The relatively even spread of the next 4 challenges: monitoring, assessment of patient understanding, and medication management suggests that a combination of these capabilities working in concert may be beneficial.

Finding #3: “A little help please...” More onsite resources, particularly CDEs and Nutritionists, are most demanded

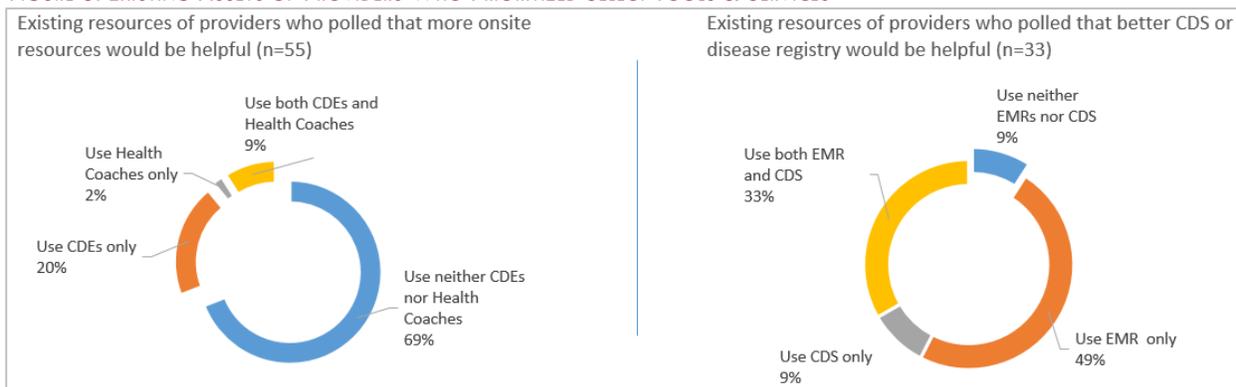
Providers expressed interest in a variety of tools and services to improve diabetes care. Key among them were more onsite Certified Diabetes Educators (CDEs) and Health Coaches. (See Figure 5). However, clinical decision support tools, remote monitoring solutions, and better educational material all polled high.

FIGURE 5: TOOLS & SERVICES PROVIDERS THOUGHT MIGHT BE MOST HELPFUL TO IMPROVE DIABETES CARE



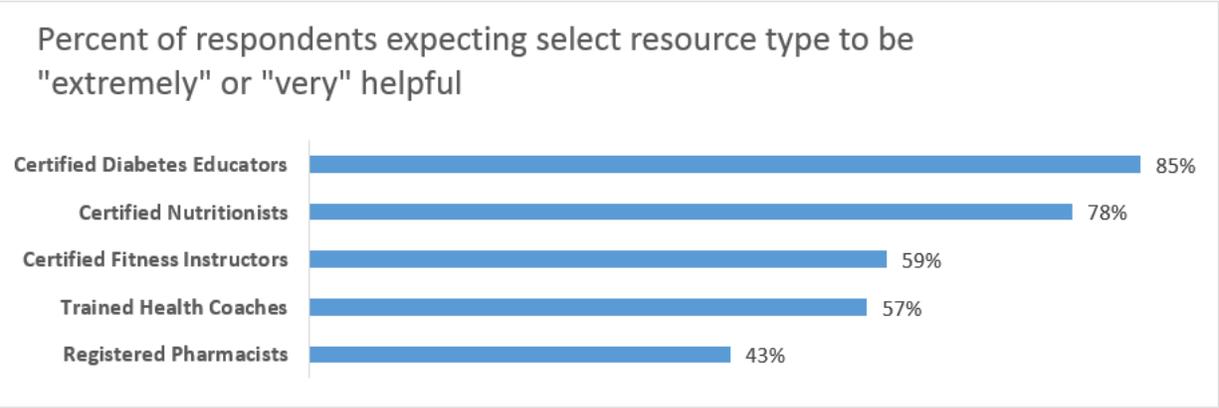
Digging in deeper, the data suggests that merely having some onsite ancillary support may not be enough. 17 of the 55 providers (31%) who said more onsite resources would be helpful already reported having at least some CDE and/or Health Coaching onsite. Similarly, having an EMR or clinical decision support does not appear to meet all the informatics needs of providers. Of the 33 who stated that better decision support tools or a computerized diabetes registry would be useful, one-third reported having both and EMR and clinical decision support (CDS) in place. Only 9% reported having neither of these tools. (See Figure 6).

FIGURE 6: EXISTING ASSETS OF PROVIDERS WHO PRIORITIZED SELECT TOOLS & SERVICES



In terms of specific ancillary support, there was broad interest in a number of different provider types. Certified Diabetes Educators and Certified Nutritionists topped the list, with 85% and 78% of respondents classifying them as likely to be “extremely” or “very” helpful additions to their practice, respectively. (See Figure 7.) While the question was prefaced with “Cost aside,…” it is not obvious that the more expensive resources polled higher than any others.

FIGURE 7: TYPES OF ANCILLARY RESOURCES CONSIDERED MOST HELPFUL



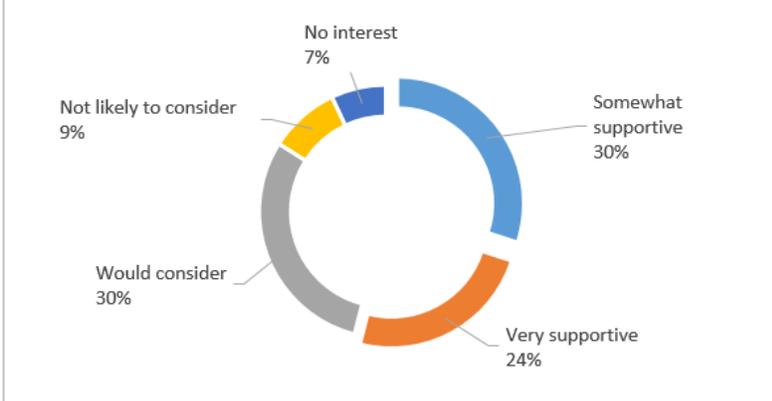
On net, there appeared to be reasonably strong belief that the addition of more ancillary resources would improve the delivery of diabetes care. In parallel, there appeared to be at least some informatics gaps, particularly around analytics and remote monitoring, which need to be filled.

Finding #4: “Onsite may not need to be onsite”... Most supportive of video-enabled diabetes support, yet meaningful concerns remain

Addition of ancillary resources to the practice can often be cost-prohibitive—requiring enough volume to keep the resource utilized even when they generate revenues themselves and/or make other revenue-generating providers more efficient. Outside health care, organizations have overcome “sub-scale issues” through the use of tele-communications, including video-conferencing. Using this approach in theory allows a resource to be in multiple locations on the same day, thus aggregating and smoothing demand.

FIGURE 8: RECEPTIVITY TO VIDEO-ENABLED ANCILLARY SUPPORT

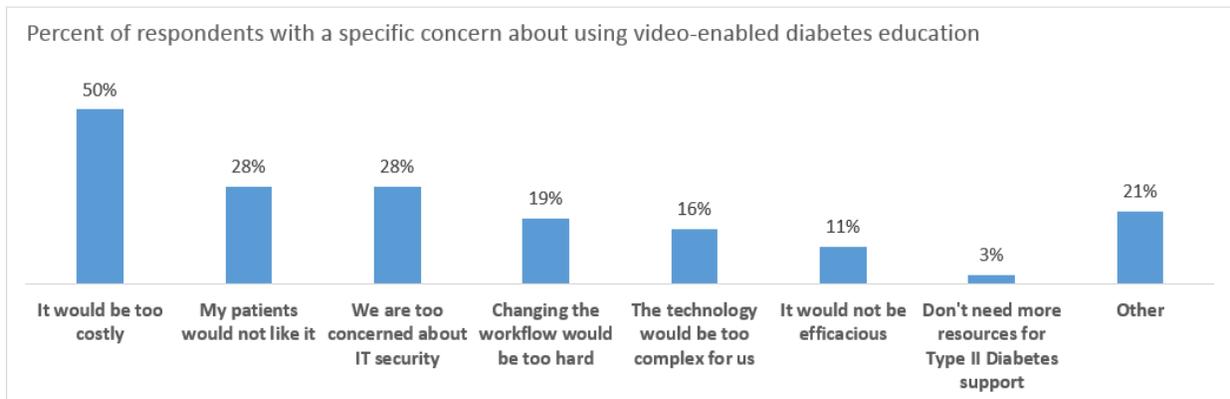
Respond to: “Cost aside, rather than having resources physically onsite, how do you feel about them being available via a secure video-chat technology?”



As noted above, early experiments using video-conferencing for diabetes education seem promising, including the work of Izquierdo et al. (2003)^{ix} and Davis et al. (2010).^x In this survey 54% of respondents said their practice would be “very” or “somewhat” supportive of such a video-chat solution. Another 30% stated “they would consider it.” (See Figure 8.) Subsequent analysis did not find variation in the receptivity among providers who thought more onsite resources would be beneficial versus those that did not.

The perceived challenges to implementing a video-based approach were significant. (See Figure 9.) 93% of respondents selected at least one concern when asked: “Which reasons would your practice have for not using secure video technology to bring in additional resources for helping manage Type II diabetes?” 21% selected three or more reasons, with a simple average of 1.7 reasons per respondent. Cost concerns, followed by patient acceptance and IT security were foremost. The “other” category was significant as well. Many of the written-in “Other” concerns could arguably be classified into patient receptivity, efficacy, or workflow complexity. Others manually-entered concerns included “we use it already,” “not enough bandwidth,” and “need to support foreign languages”.

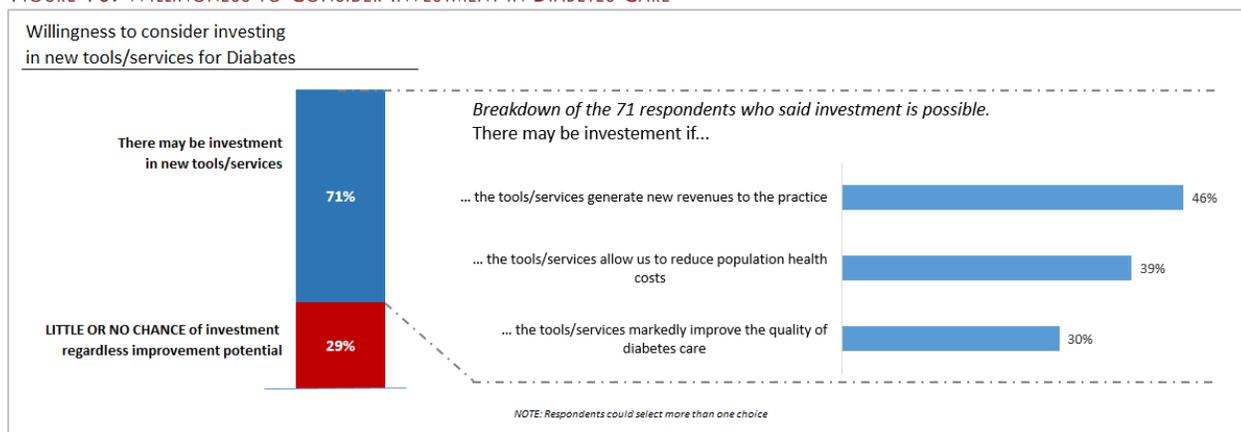
FIGURE 9: CONCERNS WITH VIDEO-ENABLED DIABETES EDUCATION



Finding #5: “Some investment is likely, but the value proposition is complex”... Quality, revenue, & population cost containment all key

While the survey was not commercially focused the instrument did probe somewhat on likelihood to invest in diabetes care over the next 24 months. The results were surprisingly encouraging. 71% of respondents said “there may be investment if the tools/services markedly improve the quality of diabetes care, generate new revenues, or allow us to reduce population health costs.” Only 29% responded “there is NOT likely to be investment in tools/services to improve diabetes care regardless of improvement potentials.” Of those who said investment may be possible, the motivations were relatively evenly split between improving quality, increasing revenue, and controlling population health costs. (See Figure 10.)

FIGURE 10: WILLINGNESS TO CONSIDER INVESTMENT IN DIABETES CARE



The reimbursement model of the 71 respondents who said investment was possible was practically identical to the population as whole. 58% of these respondents were paid either entirely or predominantly fee-for-service, which is the same proportion in the total sample. (See Table 2-C in the prior section.) This was somewhat surprising, as one might expect to see some skew in investment by providers more at-risk for population health costs. Even 53% of the 28 providers who said investment was possible if solutions reduced population health costs reported being paid predominantly via fee-for-service. Explanations of this vary. One may be simply mathematical—the survey sample was too small to draw conclusions from. However, it is possible even fee-for-service providers are interested in positioning themselves to succeed in a pay-for-value defined future.

No investment level was asked in the survey. “Investment” may have been interpreted differently by each respondent—from hundreds of dollars to hundreds of thousands. Further, simply expressing a willingness to consider investment does not imply spending will in fact occur. However, the overall openness to explore spending on innovation was notable and encouraging, even if the specific levels and motives are unclear.

So what?... Some small ideas on a big problem

Diabetes management is clinically complex, resource intensive, and patient-behavior dependent. The latter issue, motivating the patient, appears to be the major challenge facing primary care providers (PCPs) today. As such, PCPs seem very interested in augmenting their patient engagement and monitoring tools. Even those physicians with an EMR, clinical decision support, and/or some ancillary support seem to believe more tools and better tools would help. The high-prevalence of diabetics in primary care panels, often greater than 20%, further suggest that diabetes-specific resources may be worthwhile investments.

Overall, greater use of ancillary providers, especially Certified Diabetes Educators and Nutritionists, are perceived as the most promising intervention. PCPs seem open to exploring deployment of these ancillaries using video-technology, which may alleviate some of the scale, logistical, and other constraints associated with resource addition. However, merely providing more hours per day of ancillary care, whether face-to-face or using technology, may be valuable but incomplete. Per this analysis, a broader platform is suggested. Such a platform would also include: patient tracking, remote home monitoring, diabetes-specific clinical decision support engines (especially related to medication selection), and automated patient education modules. While not studied directly here, smaller practices may also benefit from access to endocrinologists for “curbside consults” as well. With such support in place, primary care providers would create virtual “diabetes clinics” within a primary care setting.

Regardless of what innovations providers pursue, the need is real, and the need is now. Already high disease burdens, unfavorable demographics, and expanding insurance coverage will all stress the already over-taxed primary care system, with little specialist capacity in reserve. Perhaps this is why openness to exploring investment polled so high.



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About the author & Agate Consulting, Inc.

This report was authored by Kevin Agatstein, Founder & CEO of Agate Consulting.

As owner of Agate Consulting, and a former member of McKinsey & Company's Payer/Provider Practice and prior to that Arthur Andersen's Healthcare Practice, Kevin Agatstein brings clients ten years of US and overseas healthcare consulting experience. With these firms, Kevin has served Brigham & Women's Hospital, Geisinger Health System, the Bermudian Ministry of Health (Bermuda), and Seoul National University Medical Center (South Korea), among others.

Before founding Agate, Kevin designed a consumer-oriented mobile pharmacy management platform now marketed as emWellics® by the company RxEOB. Prior to RxEOB, Kevin helped build CareKey, Inc., a market leading medical management application suite employed today by some of the largest payers in the US. While at CareKey Kevin was responsible for strategy & planning, business development, marketing, and general corporate operations. CareKey was sold to its long-time channel partner The TriZetto Group in December, 2005 for \$100M.

Kevin holds a degree in Chemical Engineering from MIT, and was a researcher and project manager at the MIT Sloan School of Management. Additionally, Kevin completed McKinsey & Company's mini-MBA program. Kevin is a published author in strategy, marketing, and organizational design, and speaks at healthcare and mHealth conferences.

For more information:

Kevin Agatstein
Agate Consulting, Inc.
390 Commonwealth Ave.
Suite #308
Boston, MA 02215
+1.617.901.8161
Kevin@agate-inc.com

References

- ⁱ American Diabetes Association. “Fast Facts: Data & Statistics about Diabetes.” Revised Jul 2014.
- ⁱⁱ Ibid.
- ⁱⁱⁱ CDC. “Number of Americans with Diabetes Projected to Double or Triple by 2050.” Press Release. Oct. 22, 2010.
- ^{iv} ADA & EASD. “Management of Hyperglycemia in Type 2 Diabetes: A Patient-Centered Approach, Position Statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD).” Page 14.
- ^v Endocrin Society. “U.S. Endocrinology Workforce Shortage Represents Significant Threat to Public Health.” Jan 30, 2008.
- ^{vi} Spann SJ, et al. “Management of Type 2 Diabetes in the Primary Care Setting: A Practice-Based Research Network Study.” *Ann Fam Med* 2006;4:23-31.
- ^{vii} Ali MK. “Achievement of Goals in U.S. Diabetes Care, 1999-2010.” *N Engl J Med* 2013; 368:1613-1624
- ^{viii} Conlin PR. “Telehealth and Diabetes Care Management.” Powerpoint Presentation. Accessed on 7/2/2014 at: http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/vci-011910.pdf
- ^{ix} Izquierdo RE, et al. “A Comparison of Diabetes Education Administered Telemedicine Versus In Person.” *Diabetes Care* 26: 4, April 2003.
- ^x Davis RM et al. “Tele-Health Includes Diabetes Self-Management in an Underserved Community.” *Diabetes Care* 33:8, Aug 2010.
- ^{xi} More at <http://www.surveymonkey.com>.
- ^{xii} Hsiao CJ et al. “Trends in Electronic Health Record System Use Among Office-based Physicians: United States, 2007–2012.” *National Health Statistics Report* 75: May 20, 2014.
- ^{xiii} HSC Health Tracking Physician Survey, as cited by Boukus ER et al. “Physicians Slow to E-mail Routinely with Patients.” *Center of Studying Health System Change, Issue Brief No. 134*, Oct. 2010.