

Diabetes Group Visits: Integrated Medical Care and Behavioral Support to Improve Diabetes Care and Outcomes from a Primary Care Perspective

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Abstract Of the many innovations in health care delivery proposed in the context of health reform for those with chronic diseases such as diabetes, the group visit model is relatively easy to implement and is effective for improving health outcomes and patient and provider satisfaction, with a neutral to positive effect on health care costs. This article describes the evolution of group visits for those with diabetes, the theory underlying group visits for patients with chronic medical conditions, and the existing evidence for the effectiveness of this model. It also addresses implementation of groups in practice, with an emphasis on the practical aspects of program implementation, integration of behavioral expertise into medical groups, individualization in various practice settings, and reimbursement issues.

Keywords Diabetes · Group visits · Shared medical appointments · Self-management · Behavioral change · Medical care · Behavioral support

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Introduction

The epidemic of diabetes is astounding, with nearly 25 million Americans affected by the disease [1]. Diabetes is the seventh largest cause of death due to chronic disease [2]. In addition to mortality, morbidity from diabetes-associated medical complications causes substantial adverse effects on quality of life [3, 4]. An increased risk for depression has also been found among those with diabetes [5–14]. The burden of disease, especially the coexistence of depression and diabetes-related distress, compromises the patient's ability to adhere to treatment and engage in self-management [10, 15–18]. Yet effective management of diabetes, as with so many other chronic diseases, lies largely in the hands of the patient. It requires multiple self-care skills (such as glucose monitoring, careful meal planning, frequent exercise, medication use, problem solving, and dealing with emotional issues) [8, 19, 20]. The limitation of traditional clinical care models for diabetes in addressing these needs may be one reason why only 50 % of diabetes patients nationally are reaching their diabetes-related health targets [21]. *New delivery care models are needed if patients with diabetes are to achieve desired diabetes health targets and behavioral change.* The standard brief individual physician office visit is unable to meet the needs of patients with chronic conditions, which account for much disability and the majority of health care costs [22].

Effective diabetes management requires regular medical care, self-management education, and ongoing diabetes support [19, 23, 24]. A variety of educational, self-management, and psychological interventions for patients with diabetes exist. The *focus* (behavior change vs. managing psychological distress), *setting* (individual or group), and *degree of patient involvement* (didactic or interactive) vary. Self-management programs for older adults with diabetes appear

to produce clinically important benefits, but the most effective elements of such programs are unknown [25, 26]. There is good evidence that diabetes self-management training delivered in a group setting improves health and quality-of-life outcomes, including glycemic control, self-monitoring, self-efficacy, medication use, knowledge, and utilization [27, 28••]. Self-management programs that deal with behavioral and emotional issues appear to be more effective, yet behavioral interventions are often not addressed, even by certified diabetes educators (CDEs) [29]. Diabetes education groups led by CDEs have become well established but are not always available in the primary care setting.

Interest in group visit models for patients with diabetes, including but not limited to self-management education, has grown out of a broader interest in group models for care of patients with a variety of chronic conditions. Massachusetts General Hospital, Boston, was a pioneer in the group care concept in 1907, when Pratt developed the first group programs for tuberculosis patients [30, 31]. For more than a decade, primary care practices across the nation have begun to employ some form of a group model of care for a variety of chronic diseases, with documented benefits for health outcomes and costs, and there is mounting interest in group visit models in the quality improvement arena [32].

The Shared Medical Care Model

The “shared medical care” model, also known as a “group medical visit” as first described by Scott [33–35] or “shared medical appointment” (Noffsinger) [36–39], has received increased attention and analysis in recent years [40]. Using components of these models, programs for a variety of medical conditions in multiple practice settings have been conducted [33–39, 41–55, 56•, 57–76]. Randomized trials have shown that overall, group interventions are associated with clinically significant improvement in a variety of medical, psychological, and behavioral outcomes, when compared with standard individual medical visits [41, 42, 47, 77–79].

Group visits have been successfully used to improve access to medical care [57] and to better monitor the complex chronic care needs for a high-risk population, such as the elderly [35, 41]. Patients treated through group visits have shown decreased emergency department and outpatient utilization, increased quality of life, improved self-efficacy, and higher satisfaction with care [35, 40, 42, 48, 49, 53, 55, 59, 63, 65, 78, 80].

The impact on lowering cost of care is less clear. In a postintervention cost effectiveness analysis of group visits for diabetes, researchers found a decrease in outpatient visit charges of over \$3,000 per patient per year [81]. However,

in retrospective case controlled studies of the original efficacy trials of group care for elderly patients in the Kaiser Permanente system, researchers were unable to demonstrate cost savings [70].

The theory underlying the value of the group model for care is that medical treatment is enhanced by simultaneous incorporation of two crucial aspects of the patient’s health experience: the patient’s own efficacy in managing medical problems together with his or her health care team, and the patient’s own community for support in integrating medical recommendations into his or her daily life. The *sharing* of medical care beyond the walls of the traditional individual office visit (and the medical institution) allows for more meaningful interaction and problem solving and helps to integrate education into the day-to-day management of chronic disease. The result is more efficient delivery of health information, better utilization of a multidisciplinary team in the primary care setting, more time for the patient to process information, and an opportunity for peer interaction and support to decrease the profound isolation that patients can experience when faced with the challenge of caring for chronic diseases.

Group visits vary depending on their goals, regardless of whether they are conducted in a primary or specialty care practice or targeted at a particular medical condition. There are three general areas of focus:

1. *Access* for patients to medical care visits
2. *Education* for patients about their medical condition.
3. *Enhancement of self-management skills for lifestyle and behavioral change*, to promote self-management at home and consistency in follow-through on medical recommendations [82].

All groups incorporate some combination of these (Table 1). However, they can differ in level of staffing, educational content, emphasis on behavior change, and the structure of the group interaction. Groups can be ongoing over time or limited to a set number of sessions, have fixed membership or drop-in attendance, and include family members or not.

Evolution of Group Visits

The Scott model, the cooperative health care clinic (CHCC) group visit, was developed with a strong focus on chronic disease management and was originally designed to address the needs of the geriatric population (who often have multiple medical conditions). In the CHCC model, each medical group visit session had five key components: socialization time, education, a break, a question and answer period, and one-to-one physician–patient time for medical review [36]. It was conducted by a physician alone or with a nurse

Table 1 Types of groups

Main focus of the group	ACCESS	EDUCATION	BEHAVIORAL CHANGE
	To improve access to medical care and address direct medical needs	To provide health education and teaching skills for self-management	To promote and enhance strategies for lifestyle and behavioral change
Examples of groups by focus	<ul style="list-style-type: none"> • Shared medical appointments • Group medical clinics, veterans administration hospital 	<ul style="list-style-type: none"> • Diabetes self- management education groups by CDE diabetes nurse educators 	<ul style="list-style-type: none"> • Medical group visits • Group psychotherapy • Health coaching and patient peer-to-peer support groups

Note. Adapted from: Eisenstat S, Siegel A, Carlson K, Ulman K. *Putting Group Visits into Practice. A Practical Overview to Preparation, Implementation and Maintenance of Group Visits at Massachusetts General Hospital*. Boston, MA: John D Stoeckle Center for Primary Care, January 2012 [82]

leading the education component. The visit integrated medical review with related patient education and real-time reflection through a group experience.

The Noffsinger model, the shared medical appointment (SMA) or drop-in group medical appointment (DIGMA), was designed for a changing group of patients and, in practice, was more like an individual office visit held in the presence of multiple “observers” (i.e., other patients and clinic staff). Although patients might have similar conditions—for example, a group of patients with various cardiac conditions—the group was not always medically homogeneous, and patient participation could vary from session to session. Most of the patients participating were from the patient panel of the physician leading the group. Unlike the Scott model, the SMA and DIGMA require a nurse (as a facilitator or “behaviorist”), a medical assistant, and an administrative assistant (a “documenter”) present for the entire group visit [39].

In practice, the use of group visits is much more variable than a description of the Scott and Noffsinger models would suggest. How group visits are implemented differs depending on practice resources, staffing, provider understanding of the concept, patient interest in attending groups, and the specific needs of the target patient population. In the Noffsinger model, the leader (usually a physician) directs the education and discussion, while in the Scott model, the discussion is often generated by the group. The models also differ in how the physician (or nurse practitioner) manages the medical component. For the Noffsinger model, the medical review occurs in the room while the group is underway, and in the Scott model, patients are often asked to step out of the group for an individual medical visit. The implementation of group visits in practice is often an amalgamation of these two models.

There are several reasons why group visits, of any kind, have so much potential, especially in the primary care setting. Groups provide the medical provider a more streamlined way to review medical targets and progress [65]. Group visits also help to create what Wenger and Snyder

refer to as a “community of practice,” where groups of people (patients) who share a concern or set of problems can deepen their knowledge in an area by interacting on an ongoing basis in a structured manner [83]. A group experience allows participants to effectively share their interest (understand what the issues are, agree on common approaches), interact and build relationships (help each other solve problems and answer questions, network across communities), accumulate and disseminate knowledge (share information, insights, and best practices, build tools and a knowledge base) share feelings and psychological reactions to their illness, and explore obstacles to self-care. It is also hypothesized that group visits offer hope to patients by integrating education with medical treatment, by facilitating the development of effective coping skills to improve adherence to treatment plans carried out at home, by creating opportunities to connect with and identify with others who have taken action to make changes, and by providing a place in which the physician, nurse, or group leader holds onto hope and sets up an environment that encourages the realistic belief that new pathways to change can be envisioned [84–87].

The Importance of the Behavioral Component of a Group Visit

A review of behavioral and psychosocial interventions in diabetes underscores the tendency for research to focus on *either* behavioral change *or* psychological distress and calls for more interventions that integrate behavior change with emotional support into standard diabetes care [88]. While the impetus for group visits within the practice management world was increased efficiency and access, clinicians familiar with group therapy literature recognize that care provided in a group setting has an augmented therapeutic effect because groups provide a unique opportunity for patients to come together in a supportive setting to deal with the social and psychological effects of their illness [89–94].

The rationale for all group treatment is that a unique process occurs when people come together in a group. They are more suggestible, feel psychologically more powerful than when outside the group, and thus are more open to change. A trained group leader can harness the suggestibility to help members address their feelings of powerlessness and implement constructive changes.

Groups also provide a unique opportunity to reduce the intense shame and isolation associated with many chronic medical conditions by bringing individuals together in a protected space and creating a healing community in which members feel validated [92–94]. The group bonding and camaraderie that develop over time (from patient-to-patient interaction and from the interactive discussion between medical providers and the group) give individual members a chance to learn that they are not alone with their struggles and an opportunity to identify with someone who is a bit ahead of them in self-care behaviors [87]. Group participation allows patients to address their internal psychological processes and resistance to change (which is a natural response for anyone facing medical challenges). These group experiences foster increased feelings of self-efficacy, a greater understanding of patients' medical conditions, and improved coping skills for patients to manage their health problems at home [90].

In addition, several curative factors associated with group treatment are particularly relevant to group treatment of medically ill patients: hope (the belief in the effectiveness of the model), altruism (an opportunity to give of oneself to aid another), catharsis (the opportunity for expression of strong affect), existential factors (detection of a foundation of existence through sharing with others), direct advice (sharing strategies for successful management of challenges), and imitative behavior (embracing the manner of group members who function more adequately) [87].

Group Visits in Diabetes Care: What Is the Evidence?

Evidence for the effectiveness of group visits for patients with diabetes (as compared with usual care) comes from 13 randomized controlled trials (RCTs) and many observational studies, together involving more than 3,000 patients, mostly with type 2 diabetes. Taken as a whole, evidence to date indicates that group visits have significant positive effects on intermediate diabetes outcomes such as HbA1c and blood pressure, as well as health-related quality of life, when compared with usual care, and that patients like participating in groups. However, variability in populations studied, characteristics of the intervention, and outcomes measured make comparisons across studies difficult.

Edelman et al. conducted a systematic analysis of group visits for diabetes, synthesizing results of 13 RCTs and 3

cohort studies using a rigorous methodology and, when appropriate, a meta-analysis [95••]. There was robust evidence for a significant impact of group visits versus usual care on HbA1c, systolic blood pressure, and health-related quality of life, as well as a nonsignificant improvement in LDL cholesterol, with the magnitude of effect judged as clinically important. These findings are consistent with those of other systematic reviews and meta-analyses [27, 40, 96–98].

Although variability in study designs limits quantitative analysis, the evidence to date suggests other important benefits of the group visit model for diabetes. These include improvements in self-management activities, such as home glucose monitoring, medication adherence, diabetes knowledge, and self-efficacy, and patient satisfaction [27, 40, 96–99]. There is some limited evidence suggesting improvement in provider satisfaction and productivity [27, 40, 96–99].

The duration of the effects of group visits on diabetes biophysical targets and quality of life has been measured for periods up to 4 years, with most U.S. studies limited to 6–12 months. A multicenter Italian RCT of continuing group visits versus individual care showed sustained benefits of group visits after 4 years on intermediate clinical outcomes (HbA1c, lipids, blood pressure, BMI, and serum creatinine), as well as health behaviors, quality of life, and diabetes knowledge, despite similar pharmacologic treatment in both groups [28••].

The impact of diabetes group visits on health care costs is a crucial consideration for implementation. Effects on utilization of health care resources have been variably measured but tend to show improvement, with decreased urgent care or emergency department visits and hospitalizations and fewer specialty care visits [97, 98]. Formal studies of cost effectiveness have been few and have reported mixed results, showing no change [70] or reduction in costs [81].

Understanding which patient characteristics, group visit components, and visit intensity are associated with improved outcomes is important. However, existing research does not permit reliable determination of these factors. Edelman found that the most prevalent common elements of group interventions included for analysis were the following:

- presence of a prescribing clinician
- a consistent clinical leader
- at least three clinical team members
- a closed group of participants
- brief individual time with the clinician
- evaluation of medications
- group duration of 90–120 min [95••].

One randomized trial of primary care-based group visits for patients with diabetes, designed specifically to examine

the comparative effectiveness of goal-setting within group visits, found that structured goal-setting significantly improved HbA1c and maintained improvement for 1 year [100]. Optimal implementation of group visits in terms of both effectiveness and resource allocation will require further research to clarify the most critical attributes of the group visit model.

A Case Study: The *Take a Step* Program for Those With Diabetes

The *Take a Step* program illustrates one model of a group program developed for women with diabetes. While the group visit model is broadly applicable, unique psychological factors make group programs particularly suitable for women. Women can be considered a vulnerable population, since they experience both worse outcomes and poorer quality of diabetes care [101, 102]. Despite the higher risks experienced by women (especially risk of cardiac disease), disparities in treatment of risk factors among women with diabetes have been well documented [101, 102]. Common barriers to achieving targets include confusion about medical recommendations, especially medication dosing, insufficient integration of education into a home routine, the presence of depression and social isolation, and lack of time for diabetes-related activities at home due to competing work and family commitments. The *Take a Step* program was designed to address the behavioral and emotional factors that, together with knowledge gaps, resource limitations, and social barriers, impede self-management of diabetes in women.

What sets this model apart from other group visit models is the real-time integration of mental health (including but not limited to behavioral health) together with medical care, using visits led by a physician, a nurse practitioner with diabetes expertise, and a clinical psychologist with group expertise. The incorporation of a “behaviorist” into a medical practice—and, in particular, one with experience in leading groups—greatly enhances the experience [103]. The educational component for the *Take a Step* program incorporates the Prochaska model for behavioral change [104] in addition to standard curricula from the American Diabetes Association [24] and American Association of Diabetes Educators [105, 106]. It also integrates mind–body techniques such as relaxation exercises, which have been found to be helpful for those with chronic conditions such as diabetes [107, 108]. The basic format for the visit is described in Table 2.

To address psychological and behavioral issues that affect self-management, a standardized screening mechanism for depression/distress and quality of life for those with diabetes is useful. There are a number of such tools

Table 2 Basic format of a (diabetes) group visit in 10 steps

1. A group of patients are invited to meet as a group with medical professionals
2. The session is scheduled for 1.5–2.5 h
3. Prior to the group visit, the leading provider or team (physician, nurse practitioner, and/or nurse or psychologist) conducts chart reviews
4. As patients arrive for the group, support staff obtain vital signs for each patient and patients complete previsit survey
5. At the start of the group visit, the leader explains the format of the group and obtains HIPAA consent (during initial visit only)
6. Medical review is integrated into the session, either in the room or, if there is enough staffing and not too large a group, the physician or nurse practitioner can call patients out for a separate individual medical visit during the session (usually during part devoted to group discussion)
7. Disease-related education is provided (by physician, nurse practitioner, nurse, or specialist, such as a nutrition or exercise specialist)
8. Facilitated discussion focused on psychological functioning and behavior change is conducted (by physician, nurse practitioner, psychologist, or social worker)
9. If time permits, the leader does a relaxation or meditation exercise with the group
10. The medical and behavioral leader complete postvisit documentation, triage, referral for specialty care, and follow-up services

Note. Adapted from Eisenstat S, Siegel A, Carlson K, Ulman K. *Putting Group Visits into Practice. A Practical Overview to Preparation, Implementation and Maintenance of Group Visits at Massachusetts General Hospital.* Boston, MA: John D Stoeckle Center for Primary Care, January 2012 [82]

available, depending on the area of focus [109–118]. The *Take a Step* program includes patients with prediabetes and metabolic syndrome and, for this reason, uses a more general measure for these groups, the Schwartz Outcome Scale (SOS-10) [119], a well-validated measure of psychological well-being and quality of life, as well a modification of the Self-Efficacy for Managing Chronic Disease scale [120].

Observations

The *Take a Step* program was implemented in 2005 in a primary care practice that serves a largely female patient population at an academic medical center. Although targeted initially for women with poorly controlled diabetes, it was expanded to include patients with prediabetes and metabolic syndrome who were having difficulty managing their conditions and making behavioral change. Each year, a series of eight sessions were conducted, one session every month for 8 months. Attendance was variable, usually ranging from 6 to 12 patients (sometimes over 20) attending per session. Factors such as time of year, recent hospitalization, work schedule, the educational topic, and degree of perceived need had an impact on attendance. Attendance increased with disease burden: Those with more medical comorbidity

and psychological burden attended more consecutive sessions (average of four sessions each). Often, patients chose to return to the group 6 months to 2 years after completing a program when they were having difficulty. The participants' average age was 62. The racial and ethnic composition of the group was 78 % Caucasian, 20 % Afro-American, and 2 % Latino. Fifty-one percent of the patients had type 2 diabetes (years of diabetes ranging from 1 to 15 years). The rest had prediabetes and metabolic syndrome. The average BMI for the group was 32 kg/m². Among participants with diabetes, the average HbA1c was 8 %, with 33 % above 9 %.

Observational data to date suggest positive effects on diabetes-related targets, identification and treatment of underlying depression (present in 30 % of participants in the *Take a Step* program), and increased patient satisfaction and self-efficacy. There was trend toward HbA1c weight and cholesterol reduction over 1 year among participants with diabetes. Those with HbA1c above 9 % had a downward trend but remained above 9 %; this group reported a high degree of psychological burden, as compared with those below 9 % at the start of the program. All patients, regardless of HbA1c level, reported improved compliance with visits and medications, improved confidence, and less social isolation.

In post-program-evaluation surveys, patients reported preferring a group size of 8–10 participants, since classes above 15 felt more like a class. They enjoyed open discussion about a specific topic rather than a scripted presentation. The sessions on nutrition were very popular. Universally, they liked the fact that they had more time with the clinical staff, especially the physician (the physician was present for the duration of the 2.5-h session). More than 95 % were happy that their primary care provider had referred them to the program. Group cohesion did occur, with many group members contacting one another after the group was done for support, particularly around exercise. There were no reported problems regarding confidentiality.

After fine-tuning of the methodology for recruitment, care process, and billing, the program is financially self-supporting. In addition to the benefits for patients, participation in the *Take a Step* program is inspiring and energizing for clinicians [121–123].

Characteristics of a Successful Group Program: Lessons Learned

Staffing

First and foremost, the clinician leading the group must feel comfortable interacting with patients in a group setting. The nature of clinical decision making involves open-ended

discussion, in addition to the traditional interviewing techniques used in an individual one-on-one medical visit, and requires a clinician to feel secure making quick decisions in front of other people. It also helps if the physician (or nurse practitioner) has a history of teaching patients, students, or other clinicians. There must be comfort with the unexpected challenges that can arise in a group setting, such as challenging personality types and interpersonal dynamics and a mixture of medical concerns. Strong interpersonal and facilitation skills and good relationships with support staff are important. Incorporation of a psychologist or other clinician with particular expertise in mental health and behavior may enhance effectiveness, but there are no empiric data to support any particular leadership model. The training of nurse practitioners may be particularly suited for running groups [124].

All medical providers conducting groups should have some training in group facilitation and motivational interviewing. Some of the key skills include how to create well-defined parameters for the groups, such as setting goals, developing methods to achieve these goals, and defining the roles of patients and providers. It is also helpful to have training on how to manage different personality types (such as dominant, troublesome, or quiet group members), how to manage destructive group processes such as scapegoating, how to manage questions, how to keep group discussion open and robust, how to listen for themes to help group members integrate the information during the session, and how to create group cohesion.

It is helpful to have some support staff present for the group, to check patients in for the visit, distribute and collect any previsit screening, prepare the space for individual examination, assist with the educational component, and/or provide transcription support for documentation of the visit. For each practice, choice of group visit team members is largely influenced by available practice resources and patient needs.

Clinician Referral and Patient Attendance

Providers need to be willing to refer patients, and patients need to be willing to come. Physicians have two important roles in practices offering group visit programs. Some physicians may participate directly by leading groups, while others support the program by referring their patients for group visits conducted by others in their practice.

Engaging active physician support is critical. Physicians in the primary care setting are strong patient recruiters because patients trust their own physician's recommendations. Understanding referral patterns of medical providers in their referring practice and how much autonomy individual practitioners are willing to give to the group leaders to make medical decisions (such as medication titration)

during the group session is crucial. Framing the group visit as a part of the practice's standard of care (as opposed to an optional supplement to care) and having promotional materials for clinicians to hand out during an office visit is helpful. Since patients, in general, may perceive medical provider advice and intervention as intrusive, marketing group visits in a way that supports patient autonomy is key [19, 105]. It is important to emphasize that group visits are not therapy or educational classes; rather, they are a medical visit that allows for greater access to medical providers and allows patients to learn from peers to enhance self-management.

Preparation for the Group Visit

Having a list of potential participants and contacting them to confirm their participation improve attendance. Attendance can be variable, so anticipation of patients who walk in or may be new to the group is useful.

The group visit education component for those with diabetes follows national standards for diabetes self-management education [106]. Common to diabetes self-management is the notion of empowerment, allowing as much active patient involvement as possible with the process, such as choosing topics for the health provider to discuss [19]. This type of teaching and patient interaction requires adaptation and is not solely content driven, as can be the case with house staff teaching.

(It is also important to remember that the natural dynamic of a cohesive group is a powerful tool for drawing out issues, concerns, and support that would not otherwise be addressed in a traditional individual office visit [87]. For instance, patients will often spontaneously discuss issues of noncompliance with medical recommendations and then problem-solve as a group to find strategies to improve self-management at home and improve adherence. This issue might not surface if there were simply a didactic review of medication types with the group. It is essential for the group facilitator to be prepared to welcome and encourage the expression of negative feelings about the disease and the burdens of self-care activities.)

Reimbursement for Group Visits

Poor understanding of billing standards and requirements is a common barrier to implementing financially sustainable group visits. Although coding requirements are set by national standards, there is wide variation among clinicians regarding knowledge of these requirements. In addition, there is no nationally accepted standard for coding and billing for group visits.

At present, the Center for Medicare Services has not established a specific billing code for group visits. The

American Academy of Family Practitioners sought to clarify Medicare billing requirements and received the following response from one regional Medicare contractor:

. . . under existing CPT (common procedural terminology) codes and Medicare rules, a physician could furnish a medically necessary face-to-face E&M visit (CPT code 99213 or similar code depending on level of complexity) to a patient that is observed by other patients. From a payment perspective, there is no prohibition on group members observing while a physician provides a service to another beneficiary. [125]

While commercial insurers have not adopted a single standard for group visits, some payers have offered a definition of group visits and guidelines for clinicians. For example, one guideline from a major commercial insurer in North Carolina stipulated the following for defining group visit services:

- multiple patients seen as a group by a medical practitioner for follow-up or routine care
- access to physicians
- the benefit of counseling with additional members of a health care team (e.g., behaviorist, nutritionist, nurse, or health educator)
- patients sharing experience and advice with one another
- patients drawn from established patients enrolled in a medical practice
- targeting of patients with multiple chronic conditions and comorbidities
- attendance of group is voluntary, with individual medical appointments available if requested
- medical aspects of interaction are clearly documented in the medical record [82, 126].

On the basis of existing recommendations from payers who have addressed the issue of group visits, current practice is to use existing codes for individual office visits for each person attending the group based on individual time and/or complexity. Billing codes for care delivered in a group visit are determined by the professional qualifications of the provider leading the group and the content of care provided. For the medical management component of the group visit, standard evaluation and management (E and M) codes can be utilized (Table 3).

In some group visit models, the visit may include a medical component and psychological/behavioral component, led by a physician (or nurse practitioner) and psychologist, respectively. There is both individualized medical management provided by the physician (or nurse practitioner) and counseling and facilitated group discussion related to behavior change provided by the psychologist. In this model, billing is based on the standard medical E and M visit (usually 99213, sometimes 99214) plus a separate charge

Table 3 Billing for group visits

CPT code	Group visit leader	Visit content and personnel
Level 3 E&M 99213 + 96153	(MD or NP for medical component) + (PhD psychologist for behavioral component)	This type of medical group visit includes individualized medical management provided by an MD or NP, integrated with a group behavioral session led by a clinical psychologist
Level 3 E&M 99213 or level 4 E&M 99214	MD or NP	The MD/NP led medical group visit includes individual medical management, conducted privately or in the group setting, and may be facilitated by support staff (e.g., RN, MA, or other support staff)
DSME*: G0109	CDE Nurse	The nurse (NP or RN) is supported by affiliated MDs who refer patients to the group visit; Education, not medical management is the primary focus

Note. Adapted from Eisenstat S, Siegel A, Carlson K, Ulman K. *Putting Group Visits into Practice. A Practical Overview to Preparation, Implementation and Maintenance of Group Visits at Massachusetts General Hospital.* Boston, MA: John D Stoeckle Center for Primary Care, January 2012 [82]

*Abbreviation for diabetes self-management education, conducted by nurses, nurse practitioners, or nutritionists with special certification. Certified diabetes educators (CDEs), whether nurses or dietitians, are reimbursed at a slightly higher rate using this code in a group setting than under normal billing protocol, but it is only applicable for ADA-certified DSME programs

for the psychologist's services. The latter is cited as 96153: "health and behavior intervention provided in a group setting" [127]. In this type of group visit, it is important to differentiate medical services provided from psychological/behavioral care.

Reimbursement for group visits at present is based on a cumbersome system of fee-for-service payment that is increasingly seen as outmoded [98]. Current health reform efforts should include the development of reimbursement models that reflect the content and complexity of care provided in group visits, while also minimizing risk for billing errors and providing a system for tracking utilization of group visits.

Conclusions

For many practice sites, group visits are one of many innovative components of the evolving patient-centered medical home, a coordinated system for providing primary care [128]. For those with diabetes and other chronic medical conditions, group visits can help integrate behavioral health into standard medical management and improve self-care, especially when standard diabetes self-management education programs are not readily available. The collaborative care model used in group visits improves continuity, care coordination, and information sharing, encourages shared decision making, and facilitates self-care processes for those with diabetes and other chronic medical conditions.

There is strong value added by a group visit program in terms of physician and provider satisfaction, patient satisfaction, and health outcomes.

There continues to be a need for more rigorous evaluation of the health and service impact of group visits, with attention to team composition, knowledge improvement and

implementation over time (as compared with other group interventions such as diabetes self-management education groups), impact on patient activation, function at home, medication adherence and quality of life, and cost effectiveness. Group visits have the potential to increase access and fulfill the goal of better care, potentially at lower cost, and dovetail with a population management approach. Evidence to date, however, provides strong support for expansion of the group visit model in diabetes care.

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