

# Strategies to Address Low Health Literacy and Numeracy in Diabetes

Chandra Y. Osborn, PhD, MPH, Kerri Cavanaugh, MD, MHS, and Sunil Kripalani, MD, MSc

**H**ealth literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions.”<sup>1</sup> Health literacy is involved in performing most health care tasks, including, for example, finding the Ophthalmology Department to get an eye exam, communicating effectively with health care providers, and filling out medical and insurance forms to receive health care services. A growing body of evidence shows that, compared to those with adequate health literacy, individuals with low health literacy are more likely to inappropriately or infrequently use health care services,<sup>2,3</sup> face difficulty following medical instructions,<sup>4-6</sup> have worse physical and mental health,<sup>7</sup> and have a shorter life expectancy.<sup>8</sup>

Health literacy encompasses a variety of skills beyond reading and writing (also called print literacy).<sup>1,9</sup> It includes speaking and listening (also called oral literacy), cultural and conceptual knowledge, and the ability to apply numbers as needed to manage one’s health (also known as quantitative literacy or numeracy).<sup>9,10</sup> Recent studies have found the latter to be an important independent predictor of health behaviors and outcomes.<sup>10</sup> And although health literacy and numeracy are often related,<sup>11</sup> we find many patients with adequate health literacy who lack basic numerical abilities.<sup>12</sup> The impact of patient

health literacy and numeracy on self-care activities and health outcomes may vary according to the requisite skills needed to manage one’s health in a given context.<sup>13-18</sup>

Low health literacy and numeracy are prevalent, affecting approximately one in three adult Americans.<sup>11</sup> They are associated with poor health outcomes across chronic disease contexts.<sup>19</sup> In diabetes, patients with low health literacy have greater difficulty understanding their disease,<sup>20,21</sup> participate less in self-care activities, and have poorer glycemic control.<sup>22,23</sup> Diabetic patients with low numeracy also have less knowledge about their disease and participate less in self-care activities.<sup>24</sup> In addition, low numeracy is associated with lower self-efficacy or confidence in managing diabetes<sup>24</sup> and having a higher BMI<sup>18</sup> and is modestly associated with poor glycemic control.<sup>24</sup>

Health care organizations and providers have a responsibility to create systems and environments of care that accommodate patients with low health literacy and numeracy and thus combat the negative health consequences of these two barriers to understanding and applying health information.<sup>1</sup> Several recommendations and strategies have been made available by the American Medical Association,<sup>25,26</sup> Joint Commission,<sup>27</sup> Institute of Medicine,<sup>1</sup> and the U.S. Department of Health and Human Services.<sup>28</sup> All consistently tout clear health

communication as the best way to address health literacy and numeracy limitations in clinical care settings.

## Using Plain Language

### Addressing print literacy limitations

One of the most common strategies is to simplify health information and use plain language,<sup>29</sup> which includes reducing the reading level of text and improving the tone and organization of materials presenting health information.<sup>30</sup> Put simply, using plain language means replacing medical jargon or technical terms with words people use every day in conversations with each other. Well-designed print materials present health information in a user-friendly way by organizing ideas into units. Information should also be presented in the order it is needed so readers are able to understand subsequent information.

### Addressing oral literacy limitations

Using plain language when speaking means communicating in every-day or “living room” language, limiting the length of a message, and organizing information so patients get the message quickly and clearly and in a way that makes sense to them.<sup>31</sup> Once again, health care providers should avoid using medical jargon and technical terms. If it is necessary to use a medical term, make every effort to explain the term rather than assuming patients understand it. Research has shown that, even when patients have had a medical condition for a number

of years, they still do not understand the terminology well.<sup>32,33</sup> It is also important to be aware that sometimes even seemingly simple words can be misunderstood. Consider the following examples and strategies to improve communication with diabetic patients:

- **Avoid one phrase with two interpretations.** Even commonly used words such as “could” and “might” can be difficult to understand. For example, consider the phrase, “Insulin *may* prevent your diabetes from getting worse.” To some, this means there is no conclusive evidence that insulin will produce this outcome, whereas to patients with low health literacy, this same statement may be interpreted as “Insulin *will* prevent your diabetes from getting worse.” Explain to all patients what such questionable phrases mean.
- **Write out acronyms and other new terms.** To help all patients better understand, write out the entire term the first time you use it and put the acronym in parentheses alongside it. For example, “Body Mass Index (BMI)” or “Blood Pressure (BP).”
- **Avoid using common words in unusual ways.** For example, providers may tell patients their test results are “negative,” which may sound like bad news. But when providers talk about “positive” test results, this may not be good news at all. To improve communication, confirm with all patients that they understand what you are trying to convey.
- **Be culturally sensitive.** Trying to use plain language can be challenging in itself, and communicating across cultures requires even greater vigilance. What is plain language to one cultural group may not be clear to another. Hence, developing communication strategies that are culturally sensitive is another important consideration when communicating health information.<sup>34</sup> It is important to recognize the

difference in meaning that words may have between different racial and ethnic groups and between generational cultures.

- **Ask open-ended questions.** Do not assume patients understand the information if they do not ask questions.<sup>35</sup> In fact, many patients work hard to hide the fact they have trouble understanding something they are told or are given to read because they are embarrassed.<sup>36</sup> Instead, ask an open-ended question, such as, “What questions do you have?” If a key point seems to be unclear, rephrase the information rather than just repeating it as previously presented.

#### Teach-Back Method

Physicians and other health care providers should confirm patients’ understanding of new information, but they do so infrequently.<sup>37,38</sup> The teach-back technique can facilitate patients’ understanding and retention of health information during these interactions,<sup>39,40</sup> even for patients with low health literacy.<sup>40</sup> One study found that 83.5% of patients retained information when asked to restate it compared to 60.8% of those not engaged in teach-back.<sup>41</sup> Teach-back allows providers to evaluate what patients heard, enables patients to rephrase the information into their own language, and allows providers to clarify understanding as needed to ensure the intended message was properly received. In diabetes, the use of teach-back has been associated with better glycemic control.<sup>42</sup>

The teach-back method involves asking patients to explain or demonstrate what they have been told. Do not simply ask patients, “Do you understand?” because they often answer “yes” to such questions even when they do not understand. Instead, ask patients to explain *how* they understood your instructions and *how* they will execute your

recommendations. The examples listed in Table 1 show how to initiate the teach-back method and how to ask open-ended questions to verify understanding when communicating with patients.

#### Addressing Numeracy Limitations

Numeracy, or the ability to use numbers in daily life, is a component of health literacy but is also a distinct construct that is crucial for managing diabetes. It is required for understanding measurement, cost, frequency, and risk, which are important for understanding medication dosing, health insurance and payment information, test results, assessment of risk of disease,<sup>15</sup> and performance of self-care tasks such as interpreting nutritional content on a food label.<sup>12</sup> In diabetes, low numeracy is associated with less knowledge of diabetes, less self-efficacy to manage diabetes, and less participation in diabetes self-care activities and is modestly associated with worse glycemic control.<sup>24</sup>

Low numeracy skills are common in patients with diabetes, particularly among members of racial/ethnic minority groups.<sup>14,24</sup> Although some studies have suggested that health literacy may explain racial disparities in health outcomes,<sup>43</sup> more recent studies suggest that low numeracy and not low health literacy explains racial disparities in glycemic control in diabetes and health outcomes in other chronic disease contexts.<sup>13,14</sup> Thus, strategies and tools have been made available to accommodate patients with low numeracy.

#### Diabetes Education Materials

##### 1. The Diabetes Literacy and Numeracy Education Toolkit

The Diabetes Literacy and Numeracy Education Toolkit (DLNET) is a comprehensive interactive guide to

**Table 1. Examples of Initiating Teach-Back and Asking Open-Ended Questions During Clinical Encounters****Initiating teach-back**

- “Please tell me in your own words what we have discussed today.”
- “When you get home, your spouse may ask you what the doctor said. What will you tell him/her?”
- “I want to make sure I explained everything correctly. Please tell me how you will take this new medication.

**Asking open-ended questions**

- “Some people have problems remembering to take their medicine. If this happens, what will you do?”
- “Some people may feel nauseated when taking this medicine. Tell me what you would do if this happens to you.”
- Present a real-world problem or scenario that could occur and ask patients to solve the problem by applying what they have learned (e.g., “What would you do if you woke up in the morning and realized you forgot to take your insulin at bedtime the night before?”).
- Request that patients demonstrate the recommended self-care activity and explain how they could trouble-shoot problems they may encounter when performing it.

be used cooperatively by patients and providers to enhance diabetes education and encourage optimal self-care activities.<sup>44</sup> It was developed by experts in diabetes clinical care, adult education, psychology, and health literacy and includes 24 modules that can be used in educating and caring for patients with diabetes and particularly those with poor literacy or numeracy skills. Each module is independent from the others, and providers can therefore use different sections of the toolkit customized to specific patients' needs.

Examples of module content includes blood glucose monitoring; oral medication and insulin administration instructions; and nutrition materials, including instructions for how to read a food label, carbohydrate counting, and applying the plate method to a day-to-day diet for patients with diabetes. The format of the toolkit follows the principles of clear communication; materials

are written at a sixth-grade reading level and use bulleting for key points, color coding, pictures, and step-by-step instructions.

The efficacy of the DLNET was demonstrated in two concurrent randomized, controlled trials at two university-based medical centers.<sup>45</sup> As part of an enhanced diabetes care program, use of the DLNET was compared to use of standard educational materials. In the two studies, a total of 198 patients participated, with 99 patients randomized to using the DLNET. At the conclusion of the 3-month administration of the intervention, the patients using the DLNET reduced their A1C levels more than those in the control group (median difference  $-0.70$ ; 95% CI  $-1.10$  to  $-0.20$ ;  $P = 0.005$ ). However, after an additional 3-month passive observation period, the group difference in glycemic control was not sustained. This may suggest that, for complex patients with diabetes,

ongoing educational support using literacy- and numeracy-sensitive materials may be needed.

The DLNET is available online and can be downloaded at no charge from <http://www.mc.vanderbilt.edu/diabetes/drtc/preventionandcontrol/tools.php>.

## 2. The American College of Physicians Foundation Living With Diabetes Guide

The American College of Physicians Foundation (ACPF) Living With Diabetes Guide was developed to improve diabetes education and self-care activities.<sup>46,47</sup> The ACPF guide covers five topics: diet, physical activity, blood glucose monitoring, medication adherence, and insulin use. It was designed to be easily understandable across health literacy levels and to be culturally appropriate in a variety of contexts for both English- and Spanish-speaking patients with diabetes.

The guide is grounded in social cognitive theory principles, including modeling, problem solving, and goal-setting skills. It was developed from patient and provider input and an iterative process of design and user feedback.<sup>48</sup> With this design, the guide helps to align the needs and desires of patients and providers.

Initial effectiveness studies support the utility of the ACPF Living With Diabetes Guide in clinical care settings. In a study of 250 English- and Spanish-speaking patients with diabetes who received the guide supplemented with brief counseling,  $> 90\%$  achieved at least one behavioral goal, and nearly  $75\%$  achieved two behavioral goals. Many exhibited successful problem-solving behaviors to achieve these goals, and there was no significant difference in goal achievement by health literacy level or language.<sup>46</sup> A separate analysis showed improvements in patient activation, self-efficacy, diabetes

distress, and diabetes knowledge and self-care regardless of health literacy level.<sup>47</sup> Thus, use of this guide can help patients of all health literacy levels to set, achieve, and sustain behavioral goals and improve clinically important outcomes.<sup>46,47</sup> The ACPF guide is available for purchase at <http://acpfoundation.org/hl/diabguide.htm>.

### Outsourcing Support for Low-Literacy Patients

Time is often in short supply during medical visits. Limited time and patients' discomfort with communicating may hinder providers' efforts to determine what patients do not understand and to address such knowledge gaps adequately. As an alternative or in addition to the above strategies, providers can help patients find other resources, such as local support groups, diabetes education classes, nutrition classes, health Web sites, diabetes blogs or listservs, and health education materials such as those described above that will re-train or reinforce the information provided and further empower patients to take control of their diabetes.

Sometimes such forms of assistance may be very close to home, as when patients bring a family member or friend to their medical appointment to provide an extra set of ears and to either reinforce the information imparted by the health care provider or to seek clarification when needed. Interpreters can be provided to assist with communication between English-speaking providers and patients who do not speak English. Certified patient navigators and patient advocates can serve a similar role for patients of all languages.

### Conclusions

Approximately one in three adult Americans have low health literacy,

low numeracy, or both. Among patients with diabetes, this is associated with less disease-specific knowledge, worse performance of required self-care activities, and impaired glycemic control. In broader populations, low health literacy is independently associated with a higher incidence of hospital admission, as well as mortality.

Individual health care providers and organizations should be aware that many of the patients they serve have low health literacy or numeracy and should strive to communicate in a way that improves patients' understanding and application of health information. Specific strategies that have been recommended include the use of plain language in both print and oral communication, appropriate elicitation of questions from patients, and the use of the teach-back technique to confirm patients' understanding of vital information and instructions for self-management.

Patient education programs, designed to be accessible for patients with low health literacy, are available, and early evidence supports their use. Family and community resources may also be helpful as clinicians strive to improve patient care.

### ACKNOWLEDGMENTS

Dr. Osborn was supported by a Diversity Supplement Award from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK; NIDDK P60 DK020593). Dr. Cavanaugh was supported by an NIDDK Career Development Award (NIDDK 1 K23 DK080952), and Dr. Kripalani was supported by a Career Development Award from the National Heart Lung and Blood Institute (NHLBI 1 K23 HL077597).

### REFERENCES

- <sup>1</sup>Institute of Medicine: *Health Literacy: A Prescription to End Confusion*. Washington, DC, National Academies Press, 2004
- <sup>2</sup>Gazmararian JA, Baker DW, Williams MV, Parker RM, Scott TL, Green DC, Fehrenbach SN, Ren J, Koplan JP: Health literacy among Medicare enrollees in a managed care organization. *JAMA* 281:545–551, 1999
- <sup>3</sup>Sudore RL, Mehta KM, Simonsick EM, Harris TB, Newman AB, Satterfield S, Rosano C, Rooks RN, Rubin SM, Ayonayon HN, Yaffe K: Limited literacy in older people and disparities in health and healthcare access. *J Am Geriatr Soc* 54:770–776, 2006
- <sup>4</sup>Davis TC, Wolf MS, Bass PF 3rd, Middlebrooks M, Kennen E, Baker DW, Bennett CL, Durazo-Arvizu R, Bocchini A, Savory S, Parker RM: Low literacy impairs comprehension of prescription drug warning labels. *J Gen Intern Med* 21:847–851, 2006
- <sup>5</sup>Georges CA, Bolton LB, Bennett C: Functional health literacy: an issue in African-American and other ethnic and racial communities. *J Natl Black Nurses Assoc* 15:1–4, 2004
- <sup>6</sup>Wolf MS, Davis TC, Tilson HH, Bass PF 3rd, Parker RM: Misunderstanding of prescription drug warning labels among patients with low literacy. *Am J Health Syst Pharm* 63:1048–1055, 2006
- <sup>7</sup>Wolf MS, Gazmararian JA, Baker DW: Health literacy and functional health status among older adults. *Arch Intern Med* 165:1946–1952, 2005
- <sup>8</sup>Baker DW, Wolf MS, Feinglass J, Thompson JA, Gazmararian JA, Huang J: Health literacy and mortality among elderly persons. *Arch Intern Med* 167:1503–1509, 2007
- <sup>9</sup>Zarcadoolas C, Pleasant A, Greer DS: Understanding health literacy: an expanded model. *Health Promot Int* 20:195–203, 2005
- <sup>10</sup>Rothman RL, Montori VM, Cherrington A, Pignone MP: Perspective: the role of numeracy in health care. *J Health Commun* 13:583–595, 2008
- <sup>11</sup>Kutner M, Greenberg E, Jin Y, Paulsen C: *The Health Literacy of America's Adults: Results from the 2003 National Assessment of Adult Literacy*. Washington, DC, National Center for Education Statistics, U.S. Department of Education, 2006
- <sup>12</sup>Rothman RL, Housam R, Weiss H, Davis D, Gregory R, Gebretsadik T, Shintani A, Elasy TA: Patient understanding of food labels: the role of literacy and numeracy. *Am J Prev Med* 31:391–398, 2006
- <sup>13</sup>Waldrop-Valverde D, Osborn CY, Rodriguez A, Rothman RL, Kumar M, Jones DL: Numeracy skills explain racial differences in HIV medication management. *AIDS Behav* 14:799–806, 2010
- <sup>14</sup>Osborn CY, Cavanaugh K, Wallston KA, White RO, Rothman RL: Diabetes numeracy: an overlooked factor in understanding racial disparities in glycemic control. *Diabetes Care* 32:1614–1619, 2009

- <sup>15</sup>Donelle L, Arocha JF, Hoffman-Goetz L: Health literacy and numeracy: key factors in cancer risk comprehension. *Chronic Dis Can* 29:1–8, 2008
- <sup>16</sup>Apter AJ, Cheng J, Small D, Bennett IM, Albert C, Fein DG, George M, Van Horne S: Asthma numeracy skill and health literacy. *J Asthma* 43:705–710, 2006
- <sup>17</sup>Huizinga MM, Carlisle AJ, Cavanaugh KL, Davis DL, Gregory RP, Schlundt DG, Rothman RL: Literacy, numeracy, and portion-size estimation skills. *Am J Prev Med* 36:324–328, 2009
- <sup>18</sup>Huizinga MM, Beech BM, Cavanaugh KL, Elasy TA, Rothman RL: Low numeracy skills are associated with higher BMI. *Obes (Silver Spring)* 16:1966–1968, 2008
- <sup>19</sup>Kutner M, Greenberg E, Baer J: *A First Look at the Literacy of America's Adults in the 21st Century*. Washington, DC, National Center for Education Statistics, U.S. Department of Education, 2005
- <sup>20</sup>Gazmararian JA, Williams MV, Peel J, Baker DW: Health literacy and knowledge of chronic disease. *Patient Educ Couns* 51:267–275, 2003
- <sup>21</sup>Williams MV, Baker DW, Parker RM, Nurss JR: Relationship of functional health literacy to patients' knowledge of their chronic disease: a study of patients with hypertension and diabetes. *Arch Intern Med* 158:166–172, 1998
- <sup>22</sup>Schillinger D, Barton LR, Karter AJ, Wang F, Adler N: Does literacy mediate the relationship between education and health outcomes? A study of a low-income population with diabetes. *Public Health Rep* 121:245–254, 2006
- <sup>23</sup>Schillinger D, Grumbach K, Piette J, Wang F, Osmond D, Daher C, Palacios J, Sullivan GD, Bindman AB: Association of health literacy with diabetes outcomes. *JAMA* 288:475–482, 2002
- <sup>24</sup>Cavanaugh K, Huizinga MM, Wallston KA, Gebretsadik T, Shintani A, Davis D, Gregory RP, Fuchs L, Malone R, Cherrington A, Pignone M, DeWalt DA, Elasy TA, Rothman RL: Association of numeracy and diabetes control. *Ann Intern Med* 148:737–746, 2008
- <sup>25</sup>Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association: Health literacy: report of the Council on Scientific Affairs. *JAMA* 281:552–557, 1999
- <sup>26</sup>AMA unveils health care ethics program, toolkit. *Healthcare Benchmarks Qual Improv* 13:9–11, 2006
- <sup>27</sup>Joint Commission: "What did the doctor say?" Improving health literacy to protect patient safety [article online]. Available from [http://www.jointcommission.org/newsroom/presskits/health\\_literacy](http://www.jointcommission.org/newsroom/presskits/health_literacy). Accessed 25 August 2010
- <sup>28</sup>U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion: National action plan to improve health literacy. Washington, DC, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2010
- <sup>29</sup>Stableford S, Mettger W: Plain language: a strategic response to the health literacy challenge. *J Public Health Policy* 28:71–93, 2007
- <sup>30</sup>Nagel K, Wizowski L, Duckworth J, Cassano J, Hahn SA, Neal M: Using plain language skills to create an educational brochure about sperm banking for adolescent and young adult males with cancer. *J Pediatr Oncol Nurs* 25:220–226, 2008
- <sup>31</sup>Weiss BD: *Health Literacy: A Manual for Clinicians*. Chicago, Ill., American Medical Association Foundation, 2007
- <sup>32</sup>Castro CM, Wilson C, Wang F, Schillinger D: Babel babble: physicians' use of unclarified medical jargon with patients. *Am J Health Behav* 31 (Suppl. 1):S85–S95, 2007
- <sup>33</sup>Spiro D, Heidrich F: Lay understanding of medical terminology. *J Fam Pract* 17:277–279, 1983
- <sup>34</sup>Kripalani S, Bussey-Jones J, Katz MG, Genao I: A prescription for cultural competence in medical education. *J Gen Intern Med* 21:1116–1120, 2006
- <sup>35</sup>Katz MG, Jacobson TA, Veledar E, Kripalani S: Patient literacy and question-asking behavior during the medical encounter: a mixed-methods analysis. *J Gen Intern Med* 22:782–786, 2007
- <sup>36</sup>Barrett SE, Puryear JS: Health literacy: improving quality of care in primary care settings. *J Health Care Poor Underserved* 17:690–697, 2006
- <sup>37</sup>Schillinger D, Bindman A, Wang F, Stewart A, Piette J: Functional health literacy and the quality of physician-patient communication among diabetes patients. *Patient Educ Couns* 52:315–323, 2004
- <sup>38</sup>Schwartzberg JG, Cowett A, VanGeest J, Wolf MS: Communication techniques for patients with low health literacy: a survey of physicians, nurses, and pharmacists. *Am J Health Behav* 31 (Suppl. 1):S96–S104, 2007
- <sup>39</sup>Flowers L: Teach-back improves informed consent. *OR Manag* 22:25–26, 2006
- <sup>40</sup>Kripalani S, Bengtzen R, Henderson LE, Jacobson TA: Clinical research in low-literacy populations: using teach-back to assess comprehension of informed consent and privacy information. *IRB* 30:13–19, 2008
- <sup>41</sup>Bertakis KD: The communication of information from physician to patient: a method for increasing patient retention and satisfaction. *J Fam Pract* 5:217–222, 1977
- <sup>42</sup>Schillinger D, Piette J, Grumbach K, Wang F, Wilson C, Daher C, Leong-Grotz K, Castro C, Bindman AB: Closing the loop: physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 163:83–90, 2003
- <sup>43</sup>Osborn CY, Paasche-Orlow MK, Davis TC, Wolf MS: Health literacy: an overlooked factor in understanding HIV health disparities. *Am J Prev Med* 33:374–378, 2007
- <sup>44</sup>Wolff K, Cavanaugh K, Malone R, Hawk V, Gregory BP, Davis D, Wallston K, Rothman RL: The Diabetes Literacy and Numeracy Education Toolkit (DLNET): materials to facilitate diabetes education and management in patients with low literacy and numeracy skills. *Diabetes Educ* 35:233–236, 238–241, 244–235, 2009
- <sup>45</sup>Cavanaugh K, Wallston KA, Gebretsadik T, Shintani A, Huizinga MM, Davis D, Gregory RP, Malone R, Pignone M, DeWalt DA, Elasy TA, Rothman RL: Addressing literacy and numeracy to improve diabetes care: two randomized controlled trials. *Diabetes Care* 32:2149–2155, 2009
- <sup>46</sup>DeWalt DA, Davis TC, Wallace AS, Seligman HK, Bryant-Shilliday B, Arnold CL, Freburger J, Schillinger D: Goal setting in diabetes self-management: taking the baby steps to success. *Patient Educ Couns* 77:218–223, 2009
- <sup>47</sup>Wallace AS, Seligman HK, Davis TC, Schillinger D, Arnold CL, Bryant-Shilliday B, Freburger JK, DeWalt DA: Literacy-appropriate educational materials and brief counseling improve diabetes self-management. *Patient Educ Couns* 75:328–333, 2009
- <sup>48</sup>Seligman HK, Wallace AS, DeWalt DA, Schillinger D, Arnold CL, Shilliday BB, Delgado A, Bengal N, Davis TC: Facilitating behavior change with low-literacy patient education materials. *Am J Health Behav* 31 (Suppl. 1):S69–S78, 2007

Chandra Y. Osborn, PhD, MPH, is an assistant professor of medicine in the Division of General Internal Medicine and Public Health; Kerri Cavanaugh, MD, MHS, is an assistant professor of medicine in the Division of Nephrology; and Sunil Kripalani, MD, MSc, is an associate professor of medicine at Vanderbilt University Medical Center in Nashville, Tenn.