

# Nurse Practitioner Perceptions of a Diabetes Risk Assessment Tool in the Retail Clinic Setting

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■ **IN BRIEF** This article describes a study to gain insight into the utility and perceived feasibility of the American Diabetes Association's Diabetes Risk Test (DRT) implemented by nurse practitioners (NPs) in the retail clinic setting. The DRT is intended for those without a known risk for diabetes. Researchers invited 1,097 NPs working in the retail clinics of a nationwide company to participate voluntarily in an online questionnaire. Of the 248 NPs who sent in complete responses, 114 (46%) indicated that they used the DRT in the clinic. Overall mean responses from these NPs indicated that they perceive the DRT as a feasible tool in the retail clinic setting. Use of the DRT or similar risk assessment tools in the retail clinic setting can aid in the identification of people at risk for type 2 diabetes.

**D**iabetes is the seventh leading cause of death in the United States, burdening society with high costs for treatment and placing increased demand on the health care system (1). According to the 2014 National Diabetes Statistics Report, an estimated 29.1 million people in the United States have diabetes, and 8.1 million of them are undiagnosed (2). The lack of screening for early identification of patients at risk for type 2 diabetes is a significant clinical problem. Health care providers (HCPs) need to be aware of the increasing diabetes burden and to prioritize the screening of patients who may be at risk. Screening for risk can aid in both efforts to prevent the development of diabetes and early management of the disease to reduce complications. Clinical trials have demonstrated that type 2 diabetes can be delayed or prevented through lifestyle modification or pharmacotherapy for people at increased risk (3).

In order to reduce risk for those at risk of developing diabetes, screening is a priority that will raise patient

awareness. Many patients are not aware of their risk for type 2 diabetes until they receive a confirmed diagnosis from their HCP. There are numerous health care settings in which screenings can be implemented, including but not limited to primary care practices, urgent care centers, hospital emergency departments, and retail health clinics.

Retail clinics are located in retail supermarket and pharmacy chains to provide high-quality, affordable, and easily accessible health care services for communities. A true measure of quality in retail clinics is their degree of adherence to several measures identified in the Healthcare Effectiveness Data and Information Set (4). Services in this type of setting may include treatment of acute episodic conditions, physical examinations, vaccinations, health screenings, and prevention and management of chronic conditions (5). Retail clinics provide services to patients with or without insurance or a primary care "home." Patients' visits to a retail clinic afford the opportunity to assess

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their risk for diabetes and focus on wellness and prevention strategies.

A multifaceted approach is needed to alter the current diabetes trend in the United States. One important factor is the engagement of HCPs in screening and communicating health risk information to their patients (6). Using a diabetes risk assessment tool in the retail clinic setting may help to identify patients who are at risk, improve or complement other risk assessment approaches used by HCPs, and enhance communication between HCPs and their patients regarding type 2 diabetes risk. This study aimed to explore the utility and perceptions of a diabetes risk assessment tool implemented by nurse practitioners (NPs) in the retail clinic setting.

The number of adults with diabetes in the United States increased from 5.5 million in 1980 to 21.3 million in 2012 (7). In 2012, the Centers for Disease Control and Prevention (CDC) estimated that 86 million adults (one in three) had prediabetes, which is a condition that places people at risk for developing type 2 diabetes (7). From 2008 to 2012, the cost of diabetes increased 41%, from \$176 million to \$245 million (8). Thus, it has become increasingly important to identify individuals who would benefit from interventions aimed at preventing the development of diabetes.

### The Problem

HCPs play a major role in improving the quality of health care and thus increasing the value of services provided (9). Such quality improvement occurs primarily at the level of interaction between HCPs and patients. Providers need evidence-based tools and resources to aid them in initiating important conversations and providing high-quality care to every patient.

However, studies have identified barriers to HCPs' use of type 2 diabetes risk assessment tools. These barriers include attitudes about available tools, the impracticality of their

use, and a lack of reimbursement for administering them (10). A diabetes risk assessment tool that can be completed by patients while they are waiting to be seen at a clinic could be an effective way to screen all patients. A tool that is easy for patients to use and understand can play a major role in increasing patients' awareness of their risk for diabetes.

### One Solution

Dealing with the demands of the diabetes epidemic requires health care organizations to develop innovative, coordinated approaches to prevention and care (11). Several health care organizations operate retail clinics. This study was implemented with NPs employed by one national retail clinic organization. Primary prevention and health promotion, discussed at every clinic encounter regardless of the reason for the visit, can be successful at reducing disease occurrence and improving health (12). Currently, there is no evidence in the literature regarding the use and feasibility of a diabetes risk assessment tool in the retail clinic setting. Understanding the perceptions of a diabetes risk assessment tool used by NPs in the retail clinic setting will provide a framework to assist in the development of a diabetes screening program. Assessing NPs' perceptions of this intervention also may lead to increased or continued use of the risk assessment tool and identify factors that are negatively influencing its continued use. The results may encourage other retail clinic organizations to adopt the use of a diabetes risk assessment tool in practice.

The American Diabetes Association (ADA) and the U.S. Preventive Services Task Force (USPSTF) have established guidelines for detecting prediabetes and type 2 diabetes for the purposes of prevention and early intervention. A study comparing these guidelines found that the ADA guidelines detected 38.9% more cases of prediabetes and 24.3% more cases of type 2 diabetes than the USPSTF guidelines (13). ADA recommends

the Diabetes Risk Test (DRT) as a tool for assessing patients' risk for type 2 diabetes (14). The DRT is currently used in the retail clinic organization selected for this study. This diabetes risk assessment tool has also been adopted by the National Institutes of Health/CDC National Diabetes Education Program (15). Since 20 November 2014, the retail organization involved in this study has encouraged having patients complete the DRT in its retail clinic waiting rooms.

The DRT is a one-page form containing seven questions regarding patients' age, sex, history of gestational diabetes, family history of diabetes, history of hypertension, physical activity, and weight (14). Patients are instructed to add up the scores based on their answers to determine whether they are at risk for type 2 diabetes. Those whose scores indicate that they are at risk are encouraged to participate in a diabetes screening visit at the retail clinic.

This study examined how NPs in this retail clinic setting perceive the merit of the DRT in terms of adding value to screening for type 2 diabetes and whether NPs perceive that it initiates, complements, and improves risk-related conversations between patients and providers. The study also assessed how NPs perceive patients' use of and satisfaction with the DRT. The DRT was made available for use as a resource 5 months before the initiation of this study.

### Methods

An online questionnaire to assess NPs' use and perceptions of the DRT was developed using Survey Monkey, a Web-based survey tool (16). Retail clinics in 26 markets were selected for this project, and 1,097 NPs were invited to participate. All NPs in the selected markets were sent an email message describing the purpose of the study, the time required for participation, and an Internet link they could open to complete the questionnaire. NPs' participation was voluntary,

consent was obtained from all participants, and all survey responses were anonymous. NPs could withdraw from completing the survey at any point without any consequences.

The questionnaire consisted of 15 items. The first three gathered demographic information, including practice location, years of clinical experience as an NP, and average number of patients seen per day. The fourth asked whether the NP had used or was currently using the DRT. If the answer was no, the participant was not asked to complete the remaining 11 items, and the survey was considered complete. Participants who had used or were currently using the DRT proceeded through the remaining items, which assessed their perceptions of use of the DRT (Table 1).

The survey items were developed to assess perceptions of the feasibility and value of a risk assessment tool (17). Several concepts were used to measure feasibility, including perceptions of patient use, provider approach, and patient-provider interaction. For each item, respondents used a 5-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, or Strongly Agree) to indicate the degree to which they agreed with the given statement.

Participants completed surveys from 15 April 2015 through 29 April 2015. Of the 1,097 NPs who were invited to participate, 258 returned responses. Ten responses contained no data and were therefore deleted, leaving 248 responses for analysis (response rate of 22.61%).

SPSS Statistics version 22 computer software (IBM, Armonk, N.Y.) was used for descriptive and inferential statistical analyses. All variables were examined for accuracy of data entry. Mean responses to each question were examined to facilitate discussion of the results; mean responses are a good indicator of the aggregate direction toward the two ends of the scale for each question. With responses restricted to a 5-point

**TABLE 1. Items on Perception of Feasibility**

From my clinical perspective, the Diabetes Risk Test:	
1.	Is readily accepted by patients for completion
2.	Helps patients easily understand if they are at risk for diabetes
3.	Does not take long for patients to complete
4.	Initiates more patient-to-provider conversation regarding diabetes
5.	Complements my approach to discussing risk for diabetes with patients
6.	Improves my approach to discussing risk for diabetes with patients
7.	Increases patient desire to participate in the diabetes screening service at the retail clinic
8.	Contributes to the number of repeat visits to the retail clinic
9.	Saves time in tailoring the discussion with patients with identified risk factors
10.	Improves the quality of the diabetes screening service offered at the retail clinic
11.	Increases patient satisfaction with care provided

Likert scale, a mean response value of 3 is the midpoint value of the scale and implies a neutral stance. A mean response of <3 implies that responses were in the “disagree” direction, and a mean of >3 indicates that responses were in the “agree” direction. For analysis, a Pearson correlation coefficient was used to determine the presence of a correlation between variables.

### Results

Of the 248 responses available for analysis, the highest response rates came from Chicago, Ill., with 27 responses (10.89%); Atlanta, Ga., with 26 responses (10.48%); and Orlando, Fla., with 23 responses (9.27%). A total of 243 participants indicated that they were NPs. Of these, 80 (32.92%) had 0–5 years of clinical experience, 65 (26.75%) had 6–10 years, 41 (16.87%) had 11–15 years, and 57 (23.46%) had ≥15 years of experience (Figure 1). Of the 246 participants who responded to the question about the number of patients they see on average each day at their retail clinic, 163 (66.26%) reported seeing 11–20 patients per day, 57 (23.17%) reported seeing 0–10 patients, 24 (9.76%) reported seeing 21–30 patients, and 2 (0.81%) reported seeing ≥31 patients per day.

Of the 248 respondents who reported on their use of the DRT in their retail clinic, 134 (54.03%) indicated that they did not use the DRT, whereas 114 participants (45.97%) reported that they did. Of the 114 participants who did use the DRT, 106 provided responses to the 11 perception questions regarding the feasibility of DRT use in their retail clinic setting. The majority of those 106 respondents were NPs with 1–5 years of experience (34.9%) who reported seeing 11–20 patients per day (61.3%).

Descriptive statistical analysis was performed (Table 2). The lowest mean response to any of the 11 survey items was for item 8 (“Contributes to the number of repeat visits to the retail clinic”). The mean score of 3.0000 for that item indicates that participants overall were neutral on this issue. The meaningful measure for this item was the percentage of respondents strongly agreeing/agreeing (22.6%) versus those strongly disagreeing/disagreeing (23.6%). Mean responses to each of the 11 perception items ranged from those indicating “neutral” to those indicating “agree.” The highest mean response (3.8868) was for item 3 (“Does not take long for patients to complete”). Again, the meaningful measure for this item

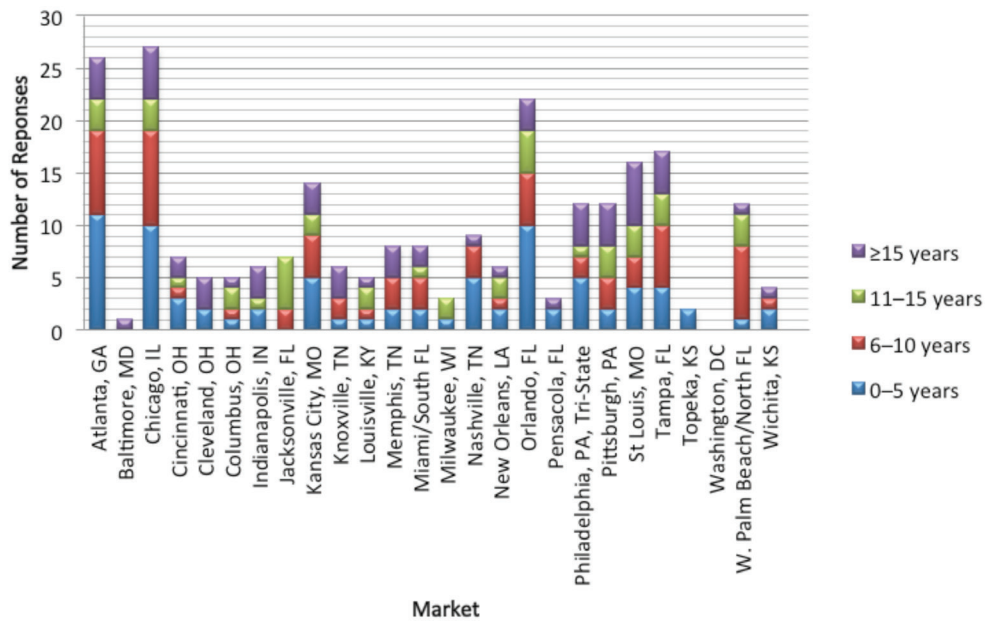


FIGURE 1. Overall responses in each market by respondents' years of experience (n = 243).

TABLE 2. Mean and Proportion Responses to Items on Perception (n = 106)

Item	Mean	Standard Deviation	Strongly Agree/ Agree (%)	Strongly Disagree/ Disagree (%)
1	3.4057	0.91317	52.8	17.9
2	3.8208	0.77824	76.4	5.7
3	3.8868	0.73447	81.1	5.7
4	3.8774	0.77709	79.2	6.6
5	3.8396	0.73208	76.4	4.7
6	3.7547	0.77842	70.8	6.6
7	3.3868	0.83462	43.4	11.3
8	3.0000	0.81650	22.6	23.6
9	3.5283	0.83046	60.4	13.2
10	3.6604	0.74177	67.9	7.5
11	3.4906	0.67957	52.8	5.7

Overall mean of individual means for all 11 items: 3.6046

was the percentage of respondents strongly agreeing/agreeing (81.1%) versus those strongly disagreeing/disagreeing (5.7%). To assess overall feasibility of DRT use in the retail clinic setting, the overall mean of all 11 individual mean responses was calculated to be 3.6046, which indicates that responses overall were in the “agree” direction. Correlation of the 11 perception items of feasibility was significant at the 0.01 level according

to the Pearson correlation coefficient (Table 3).

**Discussion**

Assessing the use of the DRT and evaluating NPs' perceptions of the feasibility of its use can be essential in determining whether this screening tool for type 2 diabetes has value in guiding the current or future health care approach for utilization with patients and facilitating patient-provider communication. In the setting stud-

ied here, utilization of the DRT was recommended but not mandated, and the majority of NPs (54.03%) indicated that they did not use the DRT. However, the overall mean of responses to the perception items from NPs who have used the DRT indicates that these NPs agree that using a diabetes risk assessment tool in the retail clinic setting is feasible. There was only one neutral response, and it was on the DRT's contribution

**TABLE 3. Pearson Correlation Coefficient of 11 Perception Items of Feasibility (n = 106)**

	1	2	3	4	5	6	7	8	9	10	11
1	1.0										
2	0.438**	1.0									
3	0.325**	0.331**	1.0								
4	0.406**	0.436**	0.443**	1.0							
5	0.469**	0.517**	0.533**	0.735**	1.0						
6	0.436**	0.556**	0.467**	0.548**	0.816**	1.0					
7	0.592**	0.357**	0.259**	0.456**	0.508**	0.426**	1.0				
8	0.524**	0.345**	0.206*	0.360**	0.462**	0.405**	0.615**	1.0			
9	0.318**	0.546**	0.349**	0.308**	0.532**	0.571**	0.403**	0.478**	1.0		
10	0.402**	0.438**	0.313**	0.638**	0.583**	0.531**	0.522**	0.456**	0.449**	1.0	
11	0.505**	0.384**	0.303**	0.494**	0.581**	0.536**	0.603**	0.463**	0.465**	0.541**	1.0

\*\*Correlation is significant at the 0.01 level (two-tailed).

\*Correlation is significant at the 0.05 level (two-tailed).

to the number of repeat patient visits to the retail clinic. Because the DRT was made available to patients waiting to be seen for a separate reason, more research is needed to determine the number of patients who may return based on the use of the DRT.

Although this study looked at NPs in the retail clinic setting, there are patients in the waiting areas of all health care settings. The DRT is not geared toward a particular setting, but rather toward patients in general. Thus, all health care settings could use a risk assessment tool to screen patients who may not be aware of their potential risk for diabetes. Implementation and utilization of such a tool can be a key component in proactively screening patients and providing high-quality, evidence-based care.

### Limitations

A limitation in this study was the small sample size. The low response rate of 22.16% (248 completed questionnaires from 1,097 NPs invited to participate) may be attributable to several factors. Some of the invited NPs were in management or educator roles with limited opportunities for direct patient care. It is possible that they did not see patients during the timeframe of the study. Some invited NPs are per-diem employees with a require-

ment to work only one or two shifts per month and may not have received the emailed invitation during the 2-week timeframe, or some potential participants may have been on paid time off or a leave of absence. Finally, one market included in the study does not evaluate and treat chronic conditions, which may have led to lower utilization of a screening tool for a chronic condition. This market was included because it met the criteria of being staffed by NPs and had implemented the DRT as a resource.

Another limitation is that feasibility of use can be interpreted in several ways. Concepts used to define feasibility in this study included patients' acceptance of the DRT, its ease of understanding by patients, the time it took patients to complete the DRT, whether the DRT initiated conversation between patients and an NP, whether the DRT complemented or improved the approach of NP, whether its use led to an increase in diabetes screening services or repeat visits, and whether its use saved time, improved the quality of care, or increased patient satisfaction. Further research is needed to translate feasibility into implementation.

### Conclusion

To address the demands of the diabetes epidemic, health care organi-

zations need to focus on risk factor awareness. Evaluating NPs' use and perceptions of the feasibility of a diabetes risk assessment tool are important in determining whether such a tool adds value in the retail clinic setting. In this study, NPs who used the DRT agreed that the use of this tool is feasible in their setting. However, less than half of respondents reported having used the DRT, and increased utilization is needed.

Using a diabetes risk assessment tool can be a quick, efficient way to increase patient screening, complement HCPs' approach, and help to initiate conversations between patients and providers. This in turn may have an impact on the early identification of individuals with diabetes and improve the quality of care offered to these patients. The more we can do as a health care community to identify risk factors for diabetes, the better our chances of preventing disease and improving the health and wellness of our patients.

Additional research is needed to understand the barriers to utilization of a diabetes risk assessment tool, examine the use of such tools to efficiently identify patients with type 2 diabetes, and explore the feasibility of using the DRT or similar tools in other health care settings.

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## Duality of Interest

No potential conflicts of interest relevant to this article were reported.

## References

1. National Conference of State Legislatures: Diabetes. Available from <http://www.ncsl.org/research/health/diseases-and-conditions/diabetes.aspx>. Accessed 17 July 2016
2. Centers for Disease Control and Prevention. National diabetes statistics report, 2014. Available from <http://www.cdc.gov/diabetes/library/reports/surveillance.html>. Accessed 12 December 2014
3. Buijsse B, Simmons RK, Griffin SJ, Schulze MB. Risk assessment tools for identifying individuals at risk for developing type 2 diabetes. *Epidemiol Rev* 2011;33:46–62
4. National Committee for Quality Assurance. HEDIS and performance measurement. Available from <http://www.ncqa.org/hedis-quality-measurement>. Accessed 17 July 2016
5. Fitzgerald K. More patients turning to retail clinics for chronic care and preventive services. *First Report Managed Care* 29 July 2014. Available from <http://www.firstreportnow.com/first/walgreens-study-finds-more-patients-turning-retail-clinics-chronic-care-and-preventive-service>. Accessed 12 May 2015
6. Okosun IS, Davis-Smith M, Seale JP. Awareness of diabetes risks is associated with healthy lifestyle behavior in diabetes-free American adults: evidence from a nationally representative sample. *Prim Care Diabetes* 2012;6:87–94
7. Centers for Disease Control and Prevention. *Diabetes Report Card 2014*. Atlanta, Ga., Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, 2015
8. Diabetes Advocacy Alliance. Continued epidemic rise in diabetes and prediabetes shows need for immediate congressional action. *PRNewswire* 18 June 2014. Available from <http://www.prnewswire.com/news-releases/continued-epidemic-rise-in-diabetes-and-prediabetes-shows-need-for-immediate-congressional-action-263708381.html>. Accessed 17 July 2016
9. Kliethermes MA. Outcomes evaluation: striving for excellence in ambulatory care pharmacy practice. *Am J Health Syst Pharm* 2014;71:1375–1386
10. Dhippayom T, Chaiyakunapruk N, Krass I. How diabetes risk assessment tools are implemented in practice: a systematic review. *Diabetes Res Clin Pract* 2014;104:329–342
11. Aston G. Diabetes: an alarming epidemic. *Hosp Health Netw* 2013;87:34–38
12. Phillips A. Capturing opportunities: pre-diabetes and public awareness. *Practice Nursing* 2014;25:351–354
13. Dall TM, Narayan KMV, Gillespie KB, et al. Detecting type 2 diabetes and prediabetes among asymptomatic adults in the United States: modeling American Diabetes Association versus U.S. Preventive Services Task Force diabetes screening guidelines. *Popul Health Metr* 2014;12:12 (DOI: 10.1186/1478-7954-12-12)
14. American Diabetes Association. Type 2 diabetes risk test. Available from <http://www.diabetes.org/are-you-at-risk/diabetes-risk-test/?loc=atrisk-slabnav>. Accessed 1 November 2014
15. National Diabetes Education Program. Diabetes risk test. Available from <http://ndep.nih.gov/am-i-at-risk/diabetes-risk-test.aspx>. Accessed 12 May 2015
16. SurveyMonkey. Create surveys, get answers. Available from <https://www.surveymonkey.com>. Accessed 2 April 2015
17. Schroy PC, Mylvaganam S, Davidson P. Provider perspectives on the utility of a colorectal cancer screening decision aid for facilitating shared decision making. *Health Expect* 2014;17:27–35