

Better connected for better decisions

First results from the ACCRUES study

The efficacy of diabetes management software was recently shown in the Accu-Chek® Connect Reports Utility and Efficiency Study (ACCRUES)¹.

The researchers found that 'technology advancements that provide seamless and wireless patient data in a format that facilitates accurate and efficient identification of glucose patterns likely enhance the ability of patients, caregivers and healthcare professionals to utilise the data in meaningful ways', leading to improved care¹.

Use of diabetes management software, such as the Accu-Chek® Connect Online system, helps healthcare providers (HCP) as well as patients with diabetes (PWD) and their caregivers (CGVs) to identify and assess diabetes information more accurately and efficiently¹.

ACCRUES STUDY

The aim of the ACCRUES study was to assess users' ability and competence in identifying and interpreting self-monitored blood glucose (SMBG), insulin, and carbohydrate

intake data. Data management software reports were compared with a standard logbook (SL).

METHOD

This study by Hinnen *et al* was a prospective, self-controlled, randomised trial. PWDs treated with continuous subcutaneous insulin infusion (CSII) and multiple daily insulin injection (MDI), CGVs and HCP who have never used diabetes data management computer software, were enrolled.

Six paired clinical cases (three CSII, three MDI) were identified and suitable multiple-choice questions/answers were developed and reviewed by diabetes specialists. The information was presented to participants via a web portal in both software report (SR) and SL formats.

The researchers documented and assessed participant response time and accuracy.

The participants also had to complete a preference questionnaire at study completion.

OUTCOME MEASURES

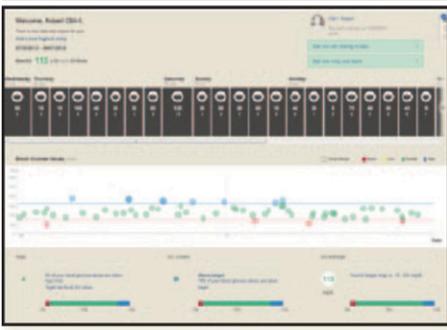
The primary outcome of the study was participants' accuracy in answering the multiple choice questions for each case, as well as the time required to respond. Accuracy and response time are presented as the total number of questions completed for each case and by question category (e.g. meaningful diabetes information, glycaemic patterns, therapy decisions).

A secondary outcome included a preference questionnaire, which participants completed following case analyses. The aim of the investigator-developed questionnaire was to obtain participants' feedback on their experience with the SR versus the SL. Participants' perceived value of the online reports were also recorded.

Presentation of paired cases

Software Report Case

Robert is a 62 year old male with type 2 diabetes. He has been wearing a pump for 6 years and is pleased with his current diabetes control. He just changed his insulin to Humalog from Novolog and wanted to share his SMBG data with his daughter and his doctor.




2 cases from same 2-week SMBG data set

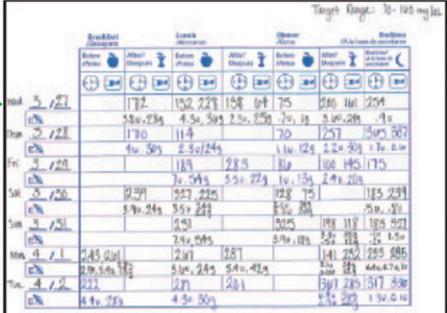
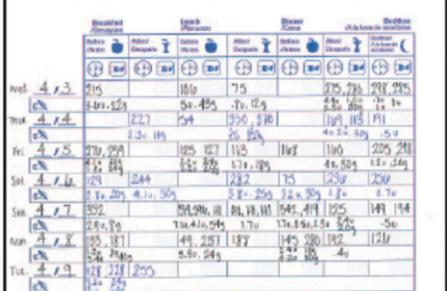
Same questions asked

| Question | Answer |
|--|---|
| 1. How many blood glucose values were below the hypo limit? (<70mg/dl) | a) 0 b) 14 c) 9 d) 12 e) 4 <input checked="" type="checkbox"/> |
| 2. This patient's average blood glucose level is | a) 306mg/dl b) 115mg/dl <input checked="" type="checkbox"/> c) 101mg/dl d) 160mg/dl e) 228mg/dl |

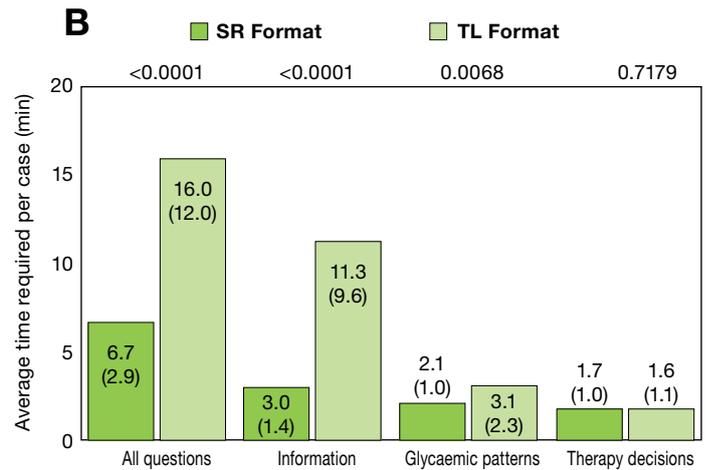
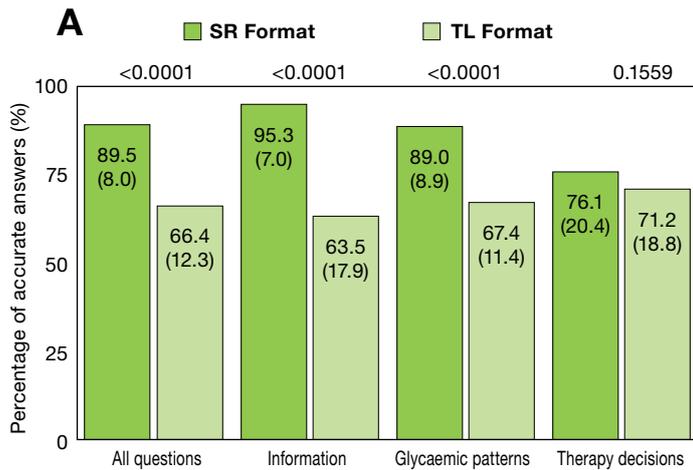
10-12 questions per case

Standard Logbook Case

Kate is a 54 year old female with type 2 diabetes for 8 years and has been wearing a pump for 2 years. She loves using an insulin pump to manage her diabetes because she travels a lot. She is pretty pleased with her overall diabetes control. She is seeing her doctor today for a routine visit.

HCP accuracy (A) and efficiency (B) of using software report (SR) formats compared with traditional logbook (TL) data



PROCEDURES

To determine their eligibility for the study, all participants had to complete a screening questionnaire. Requirements for web portal compatibility were assessed as part of screening. Participants, who were eligible, received credentials to access the study web portal.

The web portal was designed and tested for Internet Explorer 8 or newer, latest version of Firefox and Google Chrome on Windows 7 or newer operating systems, and Safari 5 or

newer on Mac OS 10.6 or newer.

The participants had to complete a demographic questionnaire, undergo online orientation for both types of reports, assess online and logbook cases and complete a preference questionnaire.

HCPs were presented with four cases (two MDI-treated, two CSII-treated), while PWDs and CGVs received three paired cases relevant to their treatment group. Cases were presented in a manner that ensured paired cases would not be presented sequentially.

One question at a time was displayed and the time it took participants to answer a question during the case studies, was measured and documented. Participants could not move to the next question until the displayed question was answered. In addition, they were not allowed to return to the previous question to change their answer.

HCPs/PWDs/CGVs information sheets that participants reviewed did not disclose that the difference between the time it took to review each case using the two methods.



Better Connected for Better Decisions

The Accu-Chek® Connect diabetes management system



Help your patients use the power of their mobile device and the web to manage their diabetes.¹

- Enable easy patient self management with the Accu-Chek® Connect mobile app, featuring a wireless connection to the Accu-Chek® Performa Connect meter*
- Support confident mealtime insulin dosing decisions for patients with the clinically proven Accu-Chek® Bolus Advisor²
- Identify blood glucose patterns to optimise therapy through an easy-to-interpret online logbook and reports that update in real time¹

For more information contact your healthcare professional.

Accu-Chek Self Help: *134*76243#
Call Toll Free: 080-34-22-38-37

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*The Accu-Chek® mobile app is designed for select mobile devices compatible with Bluetooth® smart technology. For a list of compatible devices please visit: www.accu-chek.co.za/dmapp.

1. Hinman et al. Use of Diabetes Data Management Software Reports by Health Care Providers, Patients With Diabetes, and Caregivers Improves Accuracy and Efficiency of Data Analysis and Interpretation compared With Traditional Logbook Data: First Results of the Accu-Chek Connect Reports Utility and Efficiency Study (ACCUES). Journal of Diabetes Science and Technology, 8(2):289-301, 2014.
2. Ziegler R, Cavan DA, Cranston L et al. Use of an Insulin Bolus Advisor Improves Glycemic Control in Multiple Daily Insulin Injection (MDI) Therapy Patients with Suboptimal Glycemic Control: First results from the ABACUS trial. Diabetes Care, 2013;36:3613-3619





The information sheets did disclose that breaks between cases would be allowed.

Participants had to complete the demographic questionnaire and cases and preference questionnaire within seven days of receiving their login credentials.

RESULTS

A total of 54 PWDs (n=27 MDI-treated, n=27 CSII-treated), 24 CGVs (n=13 MDI, n=11 CSII), and 33 HCPs (n=18 family practitioner, n=12 internal medicine, n=3 nurse practitioner) were eligible to take part in the study.

All participants were included in the evaluable population analyses. Differences in age, type of diabetes, use of carbohydrate counting, and SMBG frequency were seen between the PWD study groups. No between-group differences were seen among the CGVs study groups.

PWD PERFORMANCE

ACCURACY

PWDs showed greater overall accuracy, assessed by mean (SD) percentage of accurate responses, using SR presentations compared with SL data (80.3% versus 63.7%). No difference in improvement between the patient groups were recorded.

In both groups, accuracy of SR compared with TL use was greater when answering questions related to diabetes information and glycaemic patterns, but not therapy decisions.

MDI-treated PWDs showed no change in accuracy related to therapy decision questions using the SR presentations versus SL data, while CSI-treated PWDs showed less accuracy using the SR presentations.

TIME REQUIRED

PWDs spent less time per case, reviewing data and answering questions using SR presentations compared with SL data (8.6 versus 19.9 minutes).

The mean (SD) reduction in time for all cases was greater using the SR presentations among CSII-treated PWDs compared with MDI-treated PWDs (-43.2 minutes versus -24.6 minutes). The researchers noted that this difference did not reach statistical significance.

In both groups, less time was spent when answering questions related to diabetes

KEY FACTS ABOUT DIABETES

- + The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014.
- + The global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014.
- + Diabetes prevalence has been rising more rapidly in middle- and low-income countries.
- + Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation.
- + In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose.
- + Almost half of all deaths attributable to high blood glucose occur before the age of 70 years.
- + The WHO projects that diabetes will be the 7th leading cause of death in 2030.
- + Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type 2 diabetes.
- + Diabetes can be treated and its consequences avoided or delayed with diet, physical activity, medication and regular screening and treatment for complications.

Source: The World Health Organization

information and glycaemic patterns, but not therapy decisions.

CGV PERFORMANCE

ACCURACY

CGVs showed greater overall accuracy using SR presentations compared with SL data (84.6% versus 63.6%). No between-group differences in improvement were recorded.

In both groups, accuracy was greater when answering questions related to diabetes information and glycaemic patterns, but not therapy decisions.

TIME REQUIRED

CGVs spent less time reviewing data and answering questions using SR presentations

compared with SL data (7.0 versus 15.5 minutes). The mean (SD) reduction in time for all cases was greater using the SR presentations among CSII CGVs compared with MDI CGVs (-33.8 versus -18.3 minutes). However, it did not reach statistical significance, according to the researchers. Less time was spent when answering questions related to diabetes information and glycaemic patterns, but not therapy decisions.

HEALTHCARE PROFESSIONAL PERFORMANCE ACCURACY

HCPs showed greater accuracy, overall, using SR presentations compared with SL data (89.5% versus 66.4%). Accuracy was greater when answering questions related to diabetes information and glycaemic patterns, but not therapy decisions.

TIME REQUIRED

HCPs spent less time reviewing data and answering questions using SR presentations compared with SL data (6.7 versus 16.0). In addition, less time was spent when answering questions related to diabetes information and glycaemic patterns, but again not therapy decisions.

FORMAT PREFERENCES

PWDs AND CGVs PREFERENCES

Approximately 78% of PWDs agreed or strongly agreed that they preferred using the SR formats versus SL data, and agreed (24%) or strongly agreed (33.3%) that they would more likely perform SMBG per clinician recommendations when using the SR reports. A large majority of CGVs agreed (26.1%) or strongly agreed (69.6%) that they preferred using the SR reports.

HEALTHCARE PROFESSIONAL PREFERENCES

Approximately 24% of HCPs agreed or strongly agreed (75.8%) that they preferred using the SR formats versus SL data.

CONCLUSION

According to the researchers a solution that reduces diabetes burden, facilitates efficiency, and improves quality of care is a positive addition to the existing armamentarium of diabetes management tools.

References available on request. **SF**



Better Connected for Better Decisions¹

The Accu-Chek[®] Connect diabetes management system



Multiple choice Questions

SURNAME

INITIALS

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Please note that the answer sheet for the CPD article is also available online. To complete the questionnaire go to www.specialistforum.co.za, click on the CPD button and select May. The article and the questionnaire will appear.

- 1 What was the aim of the ACCRUES study?
 - a. To assess users' proficiency and efficiency in identifying and interpreting self-monitored blood glucose. **A**
 - b. To assess users' proficiency and efficiency in identify insulin, and carbohydrate intake data. **B**
 - c. To compare the efficacy of data management software reports with standard logbooks. **C**
 - d. All of the above. **D**
- 2 What was the primary outcome measure of the study?
 - a. Participants' accuracy in answering the multiple-choice questions for each case and the time required to provide their response. **A**
 - b. Participants' understanding of the multiple-choice questions. **B**
 - c. Participant's understanding of their treatment. **C**
 - d. None of the above. **D**
- 3 How much time did patient caregivers (CGVs) spend reviewing data and answering questions using software reports presentations compared with standard logbook data?
 - a. 10 versus 12.3 minutes. **A**
 - b. 8.3 versus 10.5 minutes **B**
 - c. 7.0 versus 15.5 minutes. **C**
 - d. 6.3 versus 12.3 minutes. **D**
- 4 What was the aim of the investigator-developed questionnaire?
 - a. To test participants' understanding of their condition and treatment options. **A**
 - b. Obtain participants' feedback on their experience with the online reports versus standard logbook and perceived value of the online reports. **B**
 - c. To assist healthcare providers to identify best treatment options. **C**
 - d. None of the above. **D**
- 5 What were the different percentages between healthcare professionals' accuracy, using software reports versus traditional logbook data.
 - a. 87.5% versus 50.2%. **A**
 - b. 89.3% versus 66.3%. **B**
 - c. 83.8% versus 69.7%. **C**
 - d. 89.5% versus 66.4%. **D**
- 6 Did healthcare professionals spend more, less or the same time reviewing data and answering questions using software reports compared with standard logbook data?
 - a. Less. **A**
 - b. More. **B**
 - c. The same. **C**
 - d. Not mentioned in the article. **D**
- 7 PWDs showed greater overall accuracy, assessed by mean percentage of accurate responses, using software reports presentations compared with standard logbook data.
 - a. True **A**
 - b. False **B**
- 8 Healthcare professionals spent more time reviewing data and answering questions using software reports presentations compared with standard logbook data.
 - a. True **A**
 - b. False **B**
- 9 What percentages of PWDs agreed or strongly agreed that they preferred using the software reports formats versus standard logbook data?
 - a. 12.1% and 77.8%. **A**
 - b. 11.4% and 77.6%. **B**
 - c. 10.5% and 77.8%. **C**
 - d. 11.1% and 77.8%. **D**
- 10 What percentages of healthcare professionals agreed that the reports would optimise time during patient consultations
 - a. 24.2% and 75.8%. **A**
 - b. 23.8% and 74.6%. **B**
 - c. 24.4% and 75.3%. **C**
 - d. 24.7% and 75.2%. **D**

This is to state that I have participated in the CPD-approved programme and that these are my own answers.

Signature

Date

INSTRUCTIONS:

To complete the questionnaire online, go to www.specialistforum.co.za and click on the CPD articles button. Click on the article on the right to access the online questionnaire. Alternatively, complete the questionnaire manually and submit it via e-mail to john.woodford@newmediapub.co.za or fax it through to +270862702680. Your certificate will be send to you within 10-15 working days.



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