Is quality of diabetic care up to the standards?

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A complete, organized medical record system is essential to provide a good care for people with diabetes mellitus (DM). They are not only for documentation of information but also serve as a reminder of what should be carried out at appropriate intervals,[1] this requires a specifically designed flow sheet in the medical records. Continues audit of DM medical records is useful in evaluating and improving patient's care. This study highlighted the importance of appropriate documentation's in the management and evaluation of long term care of diabetic patients in primary health care (PHC). Therefore, we conducted this study to evaluate the care received by patients with type 2 diabetes in National Guard Iskan PHC Center, Jeddah, Kingdom of Saudi Arabia (KSA).

A cross-sectional study was conducted by reviewing the medical records of all type 2 diabetic patients who consulted their physicians in 2 types of clinics, diabetic and general clinics at the National Guard Iskan PHC center, Jeddah, KSA. We enrolled medical records of patients seen during the period of 2 years starting from January 1998 to May 2000. According to statistical data available at the PHC center, the number of registered type 2 diabetic patients was 240 patients, all of which were Saudi (160 men, 80 women patients; in ratio of 2:1). Wrongly labeled records, patients who had single visits or records of patients not seen during or after January 1998 were excluded. The optimal sample size was calculated as 138 records. A preset checklist was used to assess the documentation of data in the records. American Diabetic Association (ADA) standards were used to verify the diabetic status of patients in the sample.[2,3] Data included in the checklist were grouped into 4, history taking, physical examinations, laboratory investigations, and management plan. Data also included patient's demographic data, age and gender. Data were collected from nursing notes, doctor's notes, health educator's notes and laboratory section.

To evaluate the performance of doctors and nurses we designed a scoring system. Scoring of the records involved; doctor's score, and nursing score. The total summation of doctor's score was 15. The nursing score was 2. A total of 138 records were reviewed, 96 (70%) men and 42 (30%) women patients with a ratio of 2:1. The mean age in men patients was 49.7 years, and 53.4 years in women. We believe this means that, the diabetic population in our study had the same range of mean ages as in some national studies.[4,5] Of the 138 records, 100% showed high documentation rate for blood pressure, this finding is comparable with 2 national studies.[4,6] The explanation of this high rate in our study is due to the exciting policy of measuring blood pressure for every patient as a screening program carried out by the center. On reviewing the patients records, 2% of files with no documentation of fasting blood sugar (FBG), due to these patients came mainly for refill of their medications. Monitoring of glycemic status by different modalities, one of them is FBG, is considered a corner stone of diabetes care. It is also important to assess the efficacy of therapy.[7] In contrast, there was apparently lower documentation rate for referral to health educators (22%) and foot examination (27.5%). In some state based studies in the United States of America, rates for examination of feet vary between (27 - 60%) and they related doctor's age significantly to documentation adherence with younger doctors reporting greater adherence.[8] Identification of high-risk foot conditions and appropriate management result in reduced amputations.[7] Approximately 54% of the records showed documentation of history of

Table 1 - Frequency of essential data documented for type 2 diabetic patients in National Guard Iskan, Primary Health Care Center, Jeddah, Kingdom of Saudi Arabia. (N=138).

Documented data	N	(%)
History of lifestyle	52	(37)
Blood pressure	138	(100)
Weight	124	(90)
Body mass index	54	(39)
Foot exam	38	(27)
Fasting blood glucose	132	(98)
Glycosylated hemoglobin	101	(73)
Urine analysis	88	(63)
Microalbuminuria	34	(24)
Serum creatinine	95	(67)
Lipid profile	92	(69)
Education by doctor	75	(54)
Ref to health educators	30	(22)
Referral to ophthalmologist	71	(51)
Medications	122	(83)
History of complications	75	(54)
Follow-up appointment	80	(58)

Table 2 - Frequency of essential data documented for type 2 diabetic patients according to type of the clinic by using chi-square test.

Documented data	DM clinic		GP clinic		*p* value
	N	(%)	N	(%)	
History of lifestyle	60	(44)	6	(4)	0.0005
Blood pressure	77	(56)	61	(44)	0.0005
Weight	76	(55)	55	(40)	0.04
Body mass index	53	(39)	1	(.7)	0.0005
Foot exam	37	(29)	1	(.7)	0.0005
Fasting blood sugar	76	(55)	56	(41)	0.04
Glycosylated hemoglobin	75	(54)	26	(19)	0.0005
Urinary analysis	70	(51)	18	(13)	0.0005
Microalbuminuria	24	(17)	10	(7)	0.04
Serum creatinine	67	(49)	28	(20)	0.0005
Lipid profile	64	(46)	28	(20)	0.0005
Education by doctor	61	(44)	14	(6)	0.0005
Ref to health educator	26	(19)	4	(3)	0.0005
Referral to ophthalmologist	55	(40)	16	(12)	0.0005
Medications	74	(53)	48	(35)	0.002
History of complications	60	(44)	15	(11)	0.0005
Follow-up appointment	69	(50)	11	(8)	0.0005

DM - diabetes mellitus, GP - general practitioner

complications, and 37% history of lifestyle changes. Body mass index was documented in 39% of records. Referral to ophthalmologist annually was ordered in 51% of records. Diabetes mellitus is a leading cause of blindness, and studies showed that a periodic eye assessment is cost-effective in reducing the burden of DM retinopathy and blindness.[7] Documentation of some annual investigations was very low. Of the 138 records, 24% showed documentation of microalbuminuria. On the other hand, some annual investigations were carried out in good number of patients, 69% of records showed documentation of serum creatinine, 67% lipid profile, and 63% urine analysis. **Table 1** shows frequency of essential data documented. Out of the 138 patients, 60 (44%) had their follow up in general practitioner's (GP) clinic only. On comparing documentation rate of essential data for study subjects according to type of clinic by using Chi-square test, there was a significant statistical difference between GP and DM clinics in all of documented data with p values <0.05, with higher documentation rates of data among DM clinic as shown in **Table 2**. As expected that documentation rates of essential data was better in DM clinic than in GP clinic. These differences we observed were statistically significant between the 2 types of clinics. We believed that these findings exist due to DM clinics are carried out by highly qualified family physicians. Of the 138 records, one record had a full doctor score of 15, and one record zero score. The range of doctor's score was 1 - 14 with a score of 13 showed the highest frequency (9.4%). By matching performance scores of doctors by the clinic type, we found a statistical significant difference between DM doctor's scores and GP doctor's scores with Chi-square value of 88.409 and a p value of <0.01. Of the 138 records, 124 had full nursing score of 2, 3 zero score, and 11 one score. There was a statistical significant nursing performance regarding recording of weight and blood pressure measurement with a p value <0.01.

In conclusion, quality of records for DM type 2 patients documentation of some essential information was inadequate, which may reflect the poor quality of care for those patients and was found to be inconsistent with the recommended guidelines. Developing a clear and standardized diabetes protocol within the practice derived from the general diabetic guidelines is needed to ensure that all members of the PHC centers follow the same procedure. Using specially developed DM flow sheets to ensure that essential information is documented and to provide a good reminder helping physicians. Develop a quality improvement program for auditing of records should be carried out after implementing an agreed plan is necessary to be able to know the impact of protocols and guidelines. Conduction of other study to evaluate the doctor's information, knowledge, and skills regarding diabetic patients care is recommended.

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References

1. Zoorob R, Hagen M. Guidelines on the care of Diabetic Nephropathy, Retinopathy and foot disease. ***Am Fam Physician*** 1997; 56: 2021-2028.
2. American Diabetes Association, Standards of Medical Care for patients with Diabetes Mellitus. ***Diabetes Care*** 1999; 22: S32-S41.
3. Peters A, Legorreta A, Ossorio R, Davidson M. Quality of out patient care provided to Diabetic Patients, An HMO experience. ***Diabetes Spectrum*** 1996; 9: 170-171.

4. Qureshi R, Al Owayyed A. An Audit of the process of Diabetic Care in a large family practice in Riyadh. ***Saudi Med J*** 1995; 16: 394-397.
5. Khattab M, Al Khaldi Y, Abul Fotouh M, Khan M, Humaidi M, Al Akija W, et al. Impact of a diabetic program in a family practice setting in Asir Region, Saudi Arabia. ***Diabetes Res*** 1998; 33: 115-127.
6. Mangoud A, Mandil A, Bahnassy A, Al Sebiany A, Kurashi N. Audit of Diabetic Care in a Saudi Primary Care Setting. ***Journal of Family and Community Medicine*** 1999; 6: 59-65.
7. May Field J. Who cares about the quality of diabetes care? Almost every one! ***Clinical Diabetes*** 1998; 16: 140-46.
8. ADA. Evaluating the Quality of Care Provided by Primary Care Physicians to people with Non-Insulin Dependent Diabetes Mellitus. Available from: URL: http://www.diabetes.org.

Contaminated physician's stethoscope - a potential source of transmission of infection in the hospital. *Need of frequent disinfection after use*

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Hospital acquired infections (HAI) are one of the most common cause of higher mortality, morbidity, tremendous human suffering and enhanced cost of patient care both in developing and developed countries. All endeavors towards reducing the patients' suffering and cost of patient management play an important role in the control of such infections. The transmission of HAI occurs by direct patient to patient contact, indirect contact through the contaminated hands of health care workers or through contaminated inanimate objects and medical instruments. The stethoscope is a universal tool constantly used in patient care by medical professionals. Since the same tool is repeatedly used for examining both infected and non infected patients, the diaphragm of the stethoscope gets contaminated with pathogenic bacteria when it comes in direct contact with the patients' skin. Although there is no direct evidence so far, but this might be a potential source of transmission of HAI in wards. With the increasing number of admissions of elderly patients with comorbid conditions, patients undertaking chemotherapy and those being administered with immunosuppressive drugs, it is essential that all possible sources of transmission of HAI should be taken care of. Stethoscopes frequently get contaminated with *Staphylococcus aureus* and several studies have reported the isolation of MRSA from 7-17% of stethoscopes being used by the medical professionals in the hospitals.[1] Pathogenic bacteria deposited on the diaphragm of stethoscope can survive as long as 6-18 hours, which suggests that if the diaphragm is not disinfected there is a likelihood of transmission of these pathogens to patients.[2] The present study was undertaken to determine the extent of contamination and effect of decontamination of stethoscopes used by physicians working in medical wards.

The study was conducted by the Infection Control Department of King Fahad Hospital and Tertiary Care Center, Al-Hofuf, Kingdom of Saudi Arabia (KSA) during the period of January to April 2004. The stethoscopes being used by physicians in the department of medicine were selected for the study. The culture samples from the stethoscope were collected while physicians were working in the ward. The stethoscope samples (n=48) were collected with sterile swabs moistened with sterile normal saline. The entire surface of the stethoscope diaphragm was rubbed with the moistened swab and these swabs were cultured on blood agar and MacConkey's agar within 1 hour of collection. Swab samples for culture were also taken form the ear pieces of the stethoscopes. *Staphylococcus* species were identified by Gram's stain, catalase test and tube coagulase test. *Streptococcus (Strep)* species were identified by Gram's stain, catalase test and API 20 *Strep*. The gram negative *Bacilli* were identified by Gram's stain, catalase, oxidase test, API 20E and API 20NE (BioMerieux Sa, Marcy I'Etoile, France). Antibiotic susceptibility of the isolated bacteria was determined by disk diffusion method in accordance with the guideline of National Committee for Clinical Laboratory Standards.

Diaphragm surface swabs were also collected from 10 stethoscopes after disinfecting the diaphragm with 70% isopropyl alcohol swab. The diaphragm surface was rubbed with 70% isopropyl alcohol swab (Saudi Sachet service, Riyadh, KSA), allowed to dry and then the swab samples were taken for culture. The diaphragms of majority (43/48, 89.5%) of the stethoscopes had bacterial contamination with pathogenic and potentially pathogenic bacteria. *Staphylococcus aureus* was the most common (23, 47.9%) isolated bacteria and MRSA could be isolated from 2(4.1%) of the diaphragms of stethoscopes. Gram positive bacteria were more frequently isolated from the stethoscopes than the gram negative bacteria. Multiresistant *Pseudomonas aeruginosa* were isolated from 8.2% of the stethoscope diaphragms and *Acinetobacter baumannii* from 6.2%. The pathogenic and potentially pathogenic bacteria could also be isolated from 16 (33.3%) of the ear tips of stethoscope. *Staphylococcus* was the most common