MEDINFO 2007
HISA Ltd Australia
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Online vs. Offline Quality Management in Diabetes Care: Impact On Process Quality

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Abstract

Process quality measures were compared between centers that perform quality management only offline, by means of paper based quarterly benchmarking reports, with centers that additionally performed online benchmarking with a web based application. In this observational study (164 centers with documented 60,859 patient visits) no differences in the rates of 9 recommended process quality indicators in diabetes care were observed between the two groups of centers.

Keywords:

Quality Assurance, Health Care, Internet, Diabetes Mellitus

Introduction

Number of persons suffering from Diabetes Mellitus is rising worldwide, mainly due to sedentary lifestyle and aging populations. Although effective treatments for Diabetes Mellitus are available, substantial proportion of patients does not receive recommended care.

Feedback of medical performance and benchmarking are considered to be effective methods of quality improvement [1, 2]. We developed and deployed BARS, a web-based system for data collection and benchmarking in diabetes care [3] in year 2002. Data can be collected either online, on paper forms or imported from EMRs. Using this software, paper based quality of care reports are produced quarterly and sent to all participants via ground mail.

In this poster, the impact of additional online benchmarking on process quality is examined.

Methods

Forum for Quality Systems in Diabetes Care (FQSD) is a voluntary quality improvement initiative active in Germany and Austria. FQSD members document pseudo-anonymized patient data annually on structured data entry forms, either on paper sheets or online. All centers (general practitioners and hospitals) that collected data receive quarterly non anonymized (with identifiable centers) quality of care reports. Additionally, benchmarking can be performed anytime online using BARS, a web based application [3]. Screenshot of an executed benchmarking query is given in Figure 1. FQSD members participate in continuous medical education meetings with workshop character, which are organized twice a year in Austria and once yearly in Germany.

Improvements in process quality and intermediate outcomes achieved by Austrian FQSD members have been described elsewhere [4].

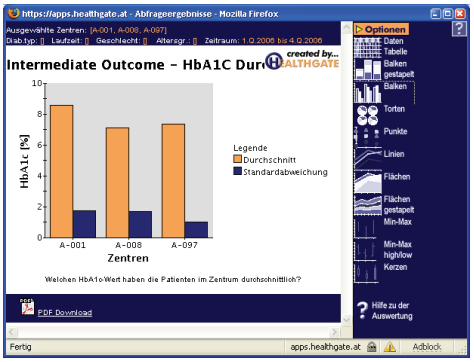

Figure 1 - Screenshot of executed query

For each center process quality measures (percentages of visits with recommended examinations or prescriptions) were calculated for the baseline and follow up period of 2 years before and after the deployment of the web application. During this time, all considered process measures were included in the reports, and for some of them, evidence has been reviewed in continuous medical education meetings.

If center personnel performed at least one additional online benchmark monthly during follow up period, this center was considered an online center. In order to adjust for the potential imbalance between online and offline groups of centers, analysis of covariance (ANCOVA) was used to assess the impact of additional online benchmarking. Centers that collected less than 10 yearly documentations during either baseline or follow up period were excluded from the analysis.

Results

147 and 17 centers have been classified as offline and online centers, respectively. Offline centers documented on average (mean ± SD) 137 ± 192 and 164 ± 288 visits during baseline and follow up period, respectively. Online centers documented 376 ± 400 and 604 ± 544 visits during baseline and follow up period, respectively, resulting in on average 179 (95% CI 65 – 292, p<0.001) more documented visits in the online group. Process quality results are shown in Table 1.

Table 1 - Process quality indicators. Data are means ± SD. Data are percentage of patients per center receiving recommended examination or medication

	Offline centers		**Online centers**		**p**
	Base-line	**Follow up**	**Base-line**	**Follow up**	
HbA1c recorded	89±19	91±16	94±5	95±5	0.761
RR recorded	95±6	96±6	97±3	95±5	0.195
Full lipid profile	32±41	74±28	31±39	78±18	0.497
Microalbumin recorded	55±34	54±38	65±22	60±25	0.652
Feet exam	64±31	63±28	76±21	70±22	0.896
Eye exam	58±25	54±24	58±20	52±24	0.652
RR> 140/90 treated	70±24	76±23	81±10	83±11	0.992
Statins prescribed**	49±30	53±29	51±18	52±17	0.810
Aspirin prescribed*	61±30	62±28	61±17	64±20	0.760

* Apply only to patients with myocardial infraction or stroke.

Discussion

In our study, online centers increased the number of documented patient visits, but did not improve process quality compared to offline centers. To our knowledge, this is the first study that evaluated the impact of additional online benchmarking on process quality measures.

In our study, only a low proportion (10%) of centers performed online benchmarking.

Alternatively, results of this study can be used to answer the question if more frequent feedback improves process quality. Results of the Cochrane review [2], in which no evidence of feedback frequency on process quality could be seen, is inline with our data.

There are several limitations of our study. Firstly, due to its non randomized design, results should be viewed with caution. Although we adjusted the results for the difference in the baseline performances, there are several other possible sources of bias we could not adjust for (dedication to quality improvement, resources available in centers …). Secondly, centers had relatively high baseline performance, which, according to the literature [2], leaves fewer opportunities for further quality improvement.

Reminders, which can be effective in improving process quality, especially if they provide timely information with actionable recommendations [5], were implemented after follow up period and their effect will be evaluated separately.

Conclusion

In our study, additional online benchmarking did not further improve process quality beyond improvements observed with the use of paper based benchmarking. Additional studies, preferably randomized controlled trials, are needed in order to objectively assess the impact of additional online benchmarking on process quality.

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