



SERVIZIO SANITARIO REGIONALE  
EMILIA-ROMAGNA  
Azienda Unità Sanitaria Locale di Modena



INFORMARSI, CONOSCERE E PARTECIPARE  
PER MIGLIORARE LA QUALITÀ DELLA VITA  
Il caso di asma, diabete di tipo 2 e cancro al seno

Istituto di Ricerche Farmacologiche Mario Negri, Via La Masa 19, Milano  
24 novembre 2010 - Aula Alessandro e Noemi Guasti

# Focus su diabete tipo 2: L'automonitoraggio e i controlli

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Clinical Care/Education/Nutrition

ORIGINAL ARTICLE

# The Impact of Blood Glucose Self-Monitoring on Metabolic Control and Quality of Life in Type 2 Diabetic Patients

An urgent need for better educational strategies

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FOR THE QUED STUDY GROUP

**A**ccording to the position statement of the American Diabetes Association, self-monitoring of blood glucose (SMBG) is considered an important component of diabetes care and is recommended for all insulin-treated patients (1). It is also considered desirable in patients treated with sulfonylureas and in all



Table 2—Results of multilevel linear regression for HbA<sub>1c</sub> levels

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Fixed effects	Non-insulin-treated patients		Insulin-treated patients	
	$\beta$	P	$\beta$	P
Level 1 covariates				
Women	0.22	0.001	0.33	0.038
BMI	0.02	0.003	0.04	0.050
Diabetes duration	0.02	<0.001	0.01	0.320
Diabetes treatment				
Diet alone versus oral agents (rc)	-0.71	<0.001	—	—
SMBG frequency				
$\geq 1/\text{day}$	0.30	0.008	—	—
$\geq 1/\text{week}$	0.27	<0.001	—	—
<1/week or never (rc)	—	—	—	—
Combined effect of SMBG and ISM				
ISM yes/SMBG $\geq 1/\text{day}$			-0.55	0.015
ISM yes/SMBG $\geq 1/\text{week}$	—	—	-0.31	0.178
ISM yes/SMBG <1/week	—	—	-0.33	0.244
ISM no/SMBG any (rc)			—	—
Random effects				
	Estimate	Proportion of total variance	Estimate	Proportion of total variance
Level 2 variance (random intercept)	0.62	27%	0.62	19%
Level 1 variance (residual)	1.71	73%	2.61	81%
Deviance test for the random intercept				
	$\chi^2$	P	$\chi^2$	P
	237.62	<0.0001	36.70	<0.0001

rc, reference category.

nel diabete non-insulino-trattato

HbA<sub>1c</sub> aumenta,

cioè peggiora



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Table 4—Relationship between blood glucose self-testing and QoL: results of multiple regression analyses

QoL domain	Insulin-treated patients				Non-insulin-treated patients			
	Frequency of blood glucose self-testing				Frequency of blood glucose self-testing			
	≥1/day (n = 212)		≥1/week (n = 209)		≥1/day (n = 227)		≥1/week (n = 641)	
	β (SEM)	P	β (SEM)	P	β (SEM)	P	β (SEM)	P
Diabetes-related stress	-2.49 (2.20)	0.26	-5.49 (2.17)	0.01	2.06 (1.51)	0.17	1.07 (1.00)	0.29
Diabetes health distress	-2.44 (2.71)	0.37	-2.86 (2.68)	0.29	8.17 (1.87)	0.0001	5.52 (1.25)	0.0001
Diabetes-related worries	3.22 (2.61)	0.22	-0.42 (2.59)	0.87	10.88 (2.21)	0.0001	3.67 (1.47)	0.01
Depressive symptoms	-1.03 (1.77)	0.56	-3.16 (1.75)	0.07	2.27 (1.17)	0.05	0.71 (0.78)	0.36

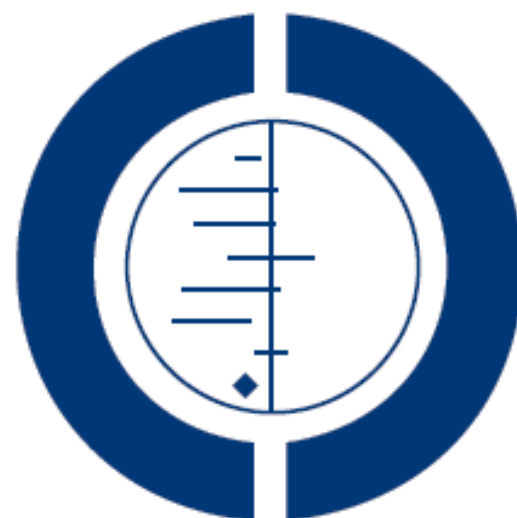
All analyses are adjusted for the following variables: age, gender, living status, education, TIBI, BMI, duration of diabetes, treatment, number of insulin injections, frequency of hypoglycemic symptoms, ability to self-adjust insulin doses, HbA<sub>1c</sub> value, setting of care. The β parameters are estimated by considering a frequency <1/week as the reference category.

**nel diabete non-  
insulino-trattato  
con l'autocontrollo  
aumentano lo stress  
e le preoccupazioni**



## Self-monitoring of blood glucose in patients with type 2 diabetes mellitus who are not using insulin (Review)

Welschen LMC, Bloemendal E, Nijpels G, Dekker JM, Heine RJ, Stalman WAB, Bouter LM



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## Authors' conclusions

From this review we concluded that self-monitoring of blood glucose might be effective in improving glycaemic control in patients with type 2 diabetes who are not using insulin. To assess the potential beneficial effects of SMBG in these patients a large and well-designed randomised controlled trial is required. This long-term trial should also investigate patient-related outcomes like quality of life, well-being and patient satisfaction, and provide adequate education to the patient to allow SMBG to be effective.

**L'autocontrollo potrebbe  
essere efficace nel tipo 2**



# Original Article: Psychological Care

## Self-monitoring of blood glucose changed non-insulin-treated Type 2 diabetes patients' beliefs about diabetes and self-monitoring in a randomized trial

D. P. French, A. N. Wade\*, P. Yudkint, H. A. W. Neil‡, A. L. Kinmonth§ and A. J. Farmert

**Conclusions** Despite changes in some beliefs about diabetes differing between groups there were no corresponding changes in self-reported health behaviours. This suggests that changes in illness beliefs resulting from SMBG do not cause changes in diabetes-related health behaviours.

Diabet. Med. 25, 1218–1228 (2008)

**La maggior consapevolezza sul diabete con l'autocontrollo non corrisponde a migliori atteggiamenti salutistici**



## Blood glucose self-monitoring in type 2 diabetes: a randomised controlled trial

AJ Farmer, AN Wade, DP French,  
J Simon, P Yudkin, A Gray, A Craven,  
L Goyder, RR Holman, D Mant,  
A-L Kinmonth and HAW Neil, on behalf  
of the DiGEM Trial Group



February 2009  
DOI: 10.3310/hta13150







## Conclusions

We have found no convincing evidence to recommend routine use of SMBG by reasonably well-controlled, non-insulin-treated patients with type 2 diabetes. The specific advantages of monitoring identified by patients need to be placed in the context of a decline in compliance in the more intensive monitoring group and, at best, a small reduction in HbA1c. Neither the within-trial economic analysis nor the long-term modelling supports SMBG as a cost-effective intervention for all non-insulin-treated patients with type 2 diabetes. However, a clinically important benefit for specific subgroups of patients in initiating good glycaemic control cannot be excluded without further research.

**Nessuna evidenza  
convincente per  
raccomandare  
l'uso di routine  
dell'autocontrollo  
nel diabete tipo 2**

riche Farmacologiche Mario Negri, Via La Masa 19, Milano  
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## Self-monitoring of blood glucose in type 2 diabetes: systematic review

C Clar, K Barnard, E Cummins, P Royle  
and N Waugh for the Aberdeen Health  
Technology Assessment Group



March 2010  
DOI: 10.3310/hta14120





**Conclusions:** The evidence suggested that SMBG is of limited clinical effectiveness in improving glycaemic control in people with T2DM on oral agents, or diet alone, and is therefore unlikely to be cost-effective. SMBG may lead to improved glycaemic control only in the context of appropriate education – both for patients and health-care professionals – on how to respond to the data, in terms of lifestyle and treatment adjustment. Also, SMBG may be more effective if patients are able to self-adjust drug treatment. Further

**L'evidenza suggerisce che l'autocontrollo ha una efficacia nella pratica clinica LIMITATA nel diabete tipo 2 non-insulino-trattato e, quindi, è improbabile che sia costo-efficace**



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## Raccomandazioni in sintesi

1. L'autocontrollo quotidiano (3-4 controlli/*die*) è ritenuto indispensabile per la persona con diabete di tipo 1 e per le donne in gravidanza che effettuino terapia insulinica.
2. L'autocontrollo glicemico continuativo con frequenza e modalità diverse è ritenuto indispensabile per la persona con diabete di tipo 2 insulino-trattato.
3. L'autocontrollo glicemico non continuativo è ritenuto utile, ma senza il sostegno di chiare evidenze di effetto sul controllo glicemico, per la persona con diabete di tipo 2 in terapia orale o dietetica.
4. La frequenza dell'autocontrollo deve essere adattata agli eventi intercorrenti, intensificandola in rapporto alle singole situazioni cliniche (patologie intercorrenti, ipoglicemia inavvertita, ipoglicemia notturna, variazione di terapia ipoglicemizzante).

Queste raccomandazioni derivano dalla lettura del documento italiano [181], delle Raccomandazioni dell'ADA [182], delle Raccomandazioni europee per il diabete di tipo 1 e del recente documento di consenso dell'*International Diabetes Federation* [183].

# Quanto costa una terapia con insulina in un paziente complicato?

Acta Diabetol (2006) 43:57–60  
DOI 10.1007/s00592-006-0213-7

ORIGINAL

A.V. Ciardullo • M. Bacchelli • M.M. Daglio • C. Carapezzi

**Effectiveness and safety of insulin glargine in the therapy of complicated or secondary diabetes: clinical audit**

**Costo terapia giornaliera: 0,68 – 0,84 €**

**Incremento rispetto alle vecchie  
insuline basali da +0,05 a +0,10€**

# Quanto costa una striscia reattiva per la glicemia a domicilio?

**Costo medio unitario al pubblico: 1,00 €**

**Costo medio unitario in ospedale: 0,35 – 0,50 €**

**Costo medio giornaliero per 3-4 strisce al dì:**

**da 1,40 a 2,00 €**



## ***In pratica...* proposta di buon senso per l'autocontrollo... in tempi di vacche magre:**

- 1) ai pazienti diabetici tipo 1, 3-4 strisce al dì (+20% se necessario)**
- 2) Fino a 3-4 strisce al dì ai pazienti diabetici tipo 2 insulino-trattati**
- 3) Solo su prescrizione medica motivata a pazienti diabetici tipo 2 in terapia orale con farmaci secretagoghi o in caso di cambio terapia fino a stabilizzazione del quadro clinico**





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# Grazie per l'attenzione

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