In Reply: Dr Dandona and colleagues are incorrect in stating that I “did not consider that increased free fatty acids and not triglycerides are responsible for insulin resistance.” This has actually been a main focus of mine and of my colleagues since 1994,1 when we first argued for “a role for hyperlipidemia in the pathogenesis of NIDDM [non–insulin-dependent diabetes mellitus].” Since then, we and many others have published evidence that the toxic consequences of lipid overload are mediated by fatty acids, particularly palmitoyl coenzyme A, and derivatives such as ceramide2 and reactive oxygen species.

Dandona et al correctly imply that as long as the fatty acids are stored as neutral fat in a fat droplet they are harmless,3 but fatty acids do provide a convenient indicator of lipid overload. Fatty acid–induced metabolic trauma is caused not only by elevations in circulating free fatty acids released from the adipocytes, but also from fatty acids hydrolyzed from circulating very-low-density lipoprotein and chylomicron triglycerides and from de novo intracellular synthesis of fatty acids from glucose precursors inside the overinsulinized cells themselves. The resulting insulin resistance may actually serve as a protective defense against further lipogenesis by blocking the entry of the lipogenic substrate glucose.4 Therapy designed to overpower this blockade by administering huge doses of insulin would be analogous to force-feeding a patient with intestinal obstruction.

Dandona et al assert that it is unlikely that the excess mortality in the ACCORD study can be attributed to lipotoxicity caused by high-dose insulin treatment, despite recent evidence supporting a lipocentric basis for this form of type 2 diabetes and its cardiac comorbidities.5 They prefer to attribute the deaths to hypoglycemia which, like lipotoxicity, is another potentially lethal consequence of high-dose insulin therapy. It matters little if the excess mortality was due to hypoglycemia induced by the insulin overdose or lipotoxicity induced by the insulin overdose. These mortalities might have been avoided with therapy that effectively and safely normalizes glucose by eliminating the underlying cause of the disorder, the chronic caloric surplus. There are readily available therapies that, when rigorously implemented, can safely reverse or alleviate the disorder.6 I maintain that the brute-force overpowering of insulin resistance by means of chronic iatrogenic hyperinsulinemia should be employed only as a very last resort.

Finally, I agree with all of the points made by Dr Marfella and colleagues.

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RESEARCH LETTER

Usability of the Medicare Health Web Site

To the Editor: The use of Internet-based applications to support health management tasks has grown enormously.1 Studies investigating these applications have focused on prevalence of or reasons for use. We evaluated the ability of a sample of older adults to use the Medicare.gov Web site to make decisions concerning eligibility for services and prescription drug plans.

Methods. Two hundred eighteen people responded to newspaper advertisements and flyers in community and senior centers in the greater Miami area through telephone contact. Participants were required to be aged at least 50 years; be cognitively unimpaired (Mini-Mental State Examination2 score >26); have had computer experience (assessed via questionnaire3); be English speaking; and not have depressive symptoms or severe visual or hearing impairments. Following screening, 201 were eligible for participation, 64 of whom expressed lack of interest or did not report for the study. Participants were enrolled consecutively; 112 completed the protocol and were compensated $50 (TABLE 1). To characterize the sample, data were collected on age, education, and race/ethnicity (based on self-report using fixed categories4). Data were collected at the University of Miami between February 2006 and May 2007. The study was approved by the university’s institutional review board, and all participants provided written consent.

Participants were asked to use the Medicare.gov Web site to (1) determine eligibility for home health care services, (2) select a home health agency to meet specified needs, (3) make a decision about enrollment in Medicare Part D based on specified criteria, and (4) select a drug plan and determine associated costs based on a specified medication regime. They provided written responses. Participants also evaluated Web site usability and the value of Internet health information via questionnaire. Responses were rated by 2 investigators using a scoring sheet and...
through analysis of video records. Interrater reliability on 2 problems in a random sample of 20 participants was good ($r = 0.96$ and $r = 0.97$).

During data collection, changes were made to the appearance of the home page and sizing of selection buttons on the Web site; content was not altered. To assess comparability...

**Table 1.** Characteristics of the Study Sample

<table>
<thead>
<tr>
<th></th>
<th>Participants (n = 112)</th>
<th>Nonparticipants (n = 89)$^a$</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), y</td>
<td>63.72 (9.39)</td>
<td>65.80 (9.10)</td>
<td>.12$^b$</td>
</tr>
<tr>
<td>Sex, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>32 (28.6)</td>
<td>19 (21.3)</td>
<td>.24$^c$</td>
</tr>
<tr>
<td>Women</td>
<td>80 (71.4)</td>
<td>70 (78.7)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>43 (38.4)</td>
<td>32 (36.0)</td>
<td>.64$^c$</td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>43 (38.4)</td>
<td>34 (38.2)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic black</td>
<td>19 (17.0)</td>
<td>13 (14.6)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic other$^d$</td>
<td>7 (6.3)</td>
<td>10 (11.2)</td>
<td></td>
</tr>
<tr>
<td>Education level, median (IQR), y</td>
<td>14 (14-17)</td>
<td>14 (12-16)</td>
<td>.12$^e$</td>
</tr>
<tr>
<td>Overall health, median (IQR)$^f$</td>
<td>3 (3-4)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Health literacy, median (IQR), S-TOFHLA score$^g$</td>
<td>35 (33-36)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Computer experience, median (IQR)$^h$</td>
<td>73.5 (53.3-93.8)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Internet experience, median (IQR)$^i$</td>
<td>10 (6-15)</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: IQR, interquartile range; NA, not applicable; S-TOFHLA, Short Test of Functional Health Literacy in Adults.

$^a$Nonparticipants included 25 persons who enrolled but did not complete the study for the following reasons: 14 were disqualified (8 failed Internet training, 1 reported depressive symptoms, 4 had low Mini-Mental State Examination scores,$^i$ 1 had language problems) and 11 quit (5 before starting the task, 6 during the task).

$^b$Using t test.

$^c$Using $\chi^2$ test.

$^d$Excluded from $\chi^2$ test because this category includes individuals reporting a large variety of ethnicities in small number.

$^e$Using Mann-Whitney test.

$^f$Health was rated using a 5-point scale (1 = poor to 5 = excellent).$^i$

$^g$The S-TOFHLA is a 36-item scale that requires participants to answer queries based on 2 passages using multiple choice.$^i$ Scores can range from 0 to 36, with a higher score indicating better health literacy. A score lower than 17 indicates inadequate health literacy.

$^h$Amount of experience with various input devices, computer operations, window operations, and software applications (scores range from 0 to 133 with higher scores indicating greater breadth of experience).$^i$

$^i$Score indicating length of time and frequency of use of the Internet and range of Internet activities (scores range from 0 to 25 with higher scores indicating greater breadth of experience).$^i$

**Table 2.** Task Performance and Usability Ratings (n = 112)

<table>
<thead>
<tr>
<th>Time, Score, or Rating</th>
<th>Task performance times, median (IQR), min</th>
<th>Choose correct home health agency</th>
<th>Execute annual cost computation procedure</th>
<th>Selection of prescription drug plan</th>
<th>Task performance measures, median (IQR)</th>
<th>Specify eligibility for home health care</th>
<th>Navigation score$^b$</th>
<th>Performance score$^c$</th>
<th>Interpretation score$^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 (8.3-11.8)</td>
<td>20 (18-22)</td>
<td>15.5 (11.3-20)</td>
<td>29 (21-31)</td>
<td>0 (0-4)</td>
<td>9 (2-12)</td>
<td>7 (0-9)</td>
<td>2 (0-3)</td>
<td></td>
</tr>
</tbody>
</table>

Medicare Web site usability ratings, No. (%) [95% CI]$^e$

| I found it difficult to navigate within the site—I was getting lost | 69 (61.6) [52.4-70.2] |
| I became frustrated using the Web site to search for information | 68 (60.7) [51.5-69.4] |
| In general, I found it difficult to locate the information that I needed within the Web site | 61 (54.5) [45.2-63.5] |
| Overall, I found the Web site difficult to use | 55 (49.1) [40.0-58.3] |

Rating of Internet information, No. (%) [95% CI]$^e$

| I think the Internet is a valuable tool for finding health information | 106 (94.6) [89.3-97.7] |
| In general, I would use the Internet to find health-related information | 107 (95.5) [90.5-98.3] |

Abbreviations: CI, confidence interval; IQR, interquartile range.

$^b$The correct number of 4 required criteria provided by the participant (scores range from 0 to 4 with higher scores indicating better performance).

$^c$The number of required Web pages accessed and method of access for selection of prescription drug plan (scores range from 0 to 14 with higher scores indicating better performance).

$^d$The number of required actions correctly executed for selection of prescription drug plan (scores range from 0 to 13 with higher scores indicating better performance).

$^e$Correct interpretation of required out-of-pocket costs for selection of prescription drug plan (scores range from 0 to 5 with higher scores indicating better performance).

$^f$Persons responding strongly agree or agree on a 5-point scale (strongly agree, agree, neutral, disagree, strongly disagree).
ity, we compared performance scores, usability ratings, and characteristics of participants who used the initial (n=82) and modified (n=30) versions using χ² tests, t tests, and Wilcoxon tests. No differences were found for ratings of usability or performance scores. A greater percentage of Hispanic (46.2%) and non-Hispanic white (44.9%) participants used the initial version than non-Hispanic black participants (9.0%), but more non-Hispanic black participants (42.9%) used the modified version than Hispanic (28.6%) or non-Hispanic white participants (28.6%) (P < .001). Analyses were performed using SPSS 13.0 (SPSS Inc, Chicago, Illinois), with 2-sided significance set at P < .05.

Results. Most participants were unable to specify all eligibility criteria for home health services (n=77 [68.8%; 95% confidence interval {CI}, 59.8%-76.8%]), choose the correct home health agency (n=90 [80.4%; 95% CI, 72.3%-86.9%]), or execute computation procedures needed for making a plan enrollment decision (n=94 [83.9%; 95% CI, 76.3%-89.8%]). Only about half (n=64 [57.1%; 95% CI, 47.9%-66.0%]) were able to make an enrollment decision. Most participants (n=81 [72.3%; 95% CI, 63.5%-80.0%]) were unable to select a drug plan or had problems navigating to the necessary Web pages, locating needed information, or executing actions required for plan selection. Participants also reported problems with usability (TABLE 2), but almost all indicated that the Internet was a valuable source of health information.

Comment. A sample of relatively well-educated adults with computer experience had difficulty using the Medicare.gov Web site to determine eligibility for services and enroll in a drug plan. Participants also reported problems navigating within the Web site and locating information. Although the sample was relatively small and restricted to people aged 50 years or more, it was diverse and larger than samples included in most usability studies. It is likely that persons with less computer experience would have even greater difficulty. To ensure that electronic health tools reach their full potential, broad and inclusive input from consumers should serve as the basis for design.

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Author Contributions: Mr Nair had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Czaja, Sharit, Nair.
Acquisition of data: Czaja.
Analysis and interpretation of data: Czaja, Sharit, Nair.
Drafting of the manuscript: Czaja, Nair.
Critical revision of the manuscript for important intellectual content: Czaja, Sharit.
Statistical analysis: Czaja, Nair.
Obtained funding: Czaja, Sharit.
Administrative, technical, or material support: Nair.
Study supervision: Czaja, Sharit.

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The speed of communication is wondrous to behold. It is also true that speed can multiply the distribution of information that we know to be untrue.
—Edward R. Murrow (1908-1965)