Evaluating information on oral contraceptive use: a randomized controlled trial to assess missed pill instructions

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BACKGROUND: Instructions for what women should do when they miss oral contraceptive pills are complex and vary according to the quantity and the timing of missed pills. METHODS: A randomized controlled trial was conducted to assess the comprehensibility of four types of instructions rendered in both 21- and 28-day versions, as well as in graphic and text formats. Interviews were conducted with 864 current and past pill users in Kingston, Jamaica. Each was provided with scenarios of missed pills and one version of the instructions; they were then asked what they should do to avoid pregnancy. RESULTS: More than 60% of respondents knew what to do when one pill was missed, but most did not give correct answers for missing two or more pills in a row, regardless of the instruction type. CONCLUSION: Women generally do a poor job of identifying steps to take when multiple pills are missed. Graphic instructions are easier to understand than text-only instructions and less information is better. Findings suggest that rendering missed pill instructions in graphic format while scaling back on the breadth of medical information results in better comprehension.

Key words: contraceptive usage/health education/oral contraceptives/printed media/randomized controlled trial

Introduction

Globally, it was estimated that in 2001 more than 2 million women became unintentionally pregnant due to improper use of oral contraceptives. Much of this improper use can be attributed to forgetting to take the pill on a regular basis (Anonymous, 2001). The instructions for what to do when pills are missed become complex, however, as instructions vary for different quantities of pills missed and for the particular week of the cycle in which the pills were missed. Indeed, research conducted in Jamaica (Chin-Quee et al., 2006) suggests that pill clients often provide incorrect responses for what action to take when one unintentionally misses oral contraceptive pills.

The issue of missed pill instructions has long been recognized as a problem. Instructions have been deemed confusing and complicated (Anonymous, 1992), and analyses of the content of patient package inserts (PPIs) have confirmed that instructions across pill manufacturers diverged when providing information on what to do when three or more pills have been missed (Williams-Deane and Potter, 1992). Efforts to standardize and simplify these instructions have since been carried out, but very little examination of their comprehensibility to pill users has been performed. One notable study—a randomized controlled trial of women who used combined oral contraceptive pills—revealed that women’s knowledge of pill use was enhanced when provided with educational leaflets and/or asked questions by their health care provider (Little et al., 1998). This suggests that the educational leaflets provided were comprehensible to pill clients, with the greatest gain in knowledge obtained by those who were exposed to both leaflets and provider questions. Little and colleagues also examined the issue of missed pills, but it was done in combination with other factors of ‘pill failure’ such as severe diarrhoea, vomiting and use of antibiotics. As such, it was not possible to determine specifically the comprehensibility or knowledge acquisition associated with instructions on missed pills. The authors know of no other systematic attempt to determine the comprehension or improve the knowledge of oral contraceptive pill clients on this subject.

Many organizations and institutions working in family planning have developed guidance on missed pills. Some are evidence-based, whereas others are not based on biomedical or social science evidence. This study compares missed pill instructions of the World Health Organization (WHO) and the Johns Hopkins University Center for Communication Programs (JHU/CCP), organizations that provide evidence-based guidance to wide audiences in both developed and developing countries. We also included a field-tested, text-based version of instructions intended to inform the content of PPIs in the USA (Ross et al., 2004). A brief background on these instructions is given below.
The WHO’s guidance on missed pills was developed as part of its Selected Practice Recommendations for Contraceptive Use (SPR), 1st edition 2001, an evidence-based guideline developed through international consensus at an expert working group meeting (WHO, 2002). However, WHO became concerned that these instructions were too complicated for pill users to follow effectively. This led WHO to develop a simplified version of these instructions.

The JHU/CCP’s Essentials of Contraceptive Technology (ECT) (Hatcher et al., 1997), sponsored by the United States Agency for International Development (USAID), is a handbook with widespread distribution in developing countries. Although there have been more recent reprints of ECT, the 1997 instructions were included in this study, because they differ conceptually from the WHO’s 2001 SPR and the subsequent simplified version, yet present a medically sound and potentially more comprehensible alternative than its WHO counterparts.

The text-only instructions grew out of concerns that consumer information included in US pill packages is too complicated for users. These field-tested, text-based instructions were submitted to the Food and Drug Administration (FDA) in February 2001 as a simplified version of the PPI.

The 2001 WHO SPRs, the subsequent WHO simplified version and the JHU/CCP’s ECT instructions were converted into graphic formats by WHO’s Department of Reproductive Health and Research. Some wording changes were made, but the essential rules were left unchanged. It was hypothesized that the graphic format would be more comprehensible than the text. To confirm this hypothesis, we included the simplified version, yet present a medically sound and potentially more comprehensible alternative than its WHO counterparts.

The relative comprehensibility of these instructions was tested in Jamaica, where 23 brands of pills were available in the fall of 2003. Two-thirds (15/23) of the brands were 21-day pill regimens, but pill distributors reported distributing almost equal monthly volumes of 21- (48%) and 28-day (52%) pill packs. Therefore, the four instruction types were presented in both 21- and 28-day versions.

The objective of this study was to determine whether there are differences in the level of comprehension among the four types of instructions, as determined by pill users themselves.

### Methods

The study was carried out as a randomized controlled trial to assess the comprehensibility of four types of instructions rendered in both 21- and 28-day versions: (i) the SPR graphic, (ii) the WHO graphic, (iii) the ECT graphic and (iv) the PPI text [see Appendices A–D (Supplementary data)]. Study participants were given only one version of these instructions, along with scenarios of missed pills, and asked what they should do—according to the instructions—to avoid pregnancy. We developed 10 scenarios that illustrated one, or two or more missed pills in a row (see Figure 1 for the generic version of scenarios). More detailed information on missed pill scenarios is provided with Figure 1. The specifications of these scenarios were superimposed on images of the 23 pill brands in Jamaica, with graphics (a starburst pattern) that mimicked the look of pills having been pushed out the back of the blister packs in places where the pills would have been ‘taken’ by the client.

The first author trained three interviewers who were staff members of a research marketing firm in Kingston and also instructed these interviewers on the use of the randomization and allocation schedule described below.

Only former and current pill clients were systematically recruited for this study to evaluate the instructions among a sample of women for whom pill-use instructions had relevance. Additionally, only women at the age of consent in Jamaica—16 years or older—were asked to participate in the study. These women were recruited at central locations, such as major shopping centres and public parks in the capital city, Kingston. These selected locations allowed us to interview women from different socioeconomic and educational levels.

Interviewers approached unaccompanied women at the 12 central locations in Kingston between September and December 2003. The four types of missed pill instructions were randomized at each central location. Each interviewer was given a randomly assigned sequence of the instructions. Participants were interviewed in a private area by the interviewers who asked them which brand of oral contraceptives they currently or most recently used. They were shown an image of that brand to verify that it was the one with which they have or had had experience. Before testing the instructions, participants were asked what they should do (or have done) when they miss just one, or two or more oral contraceptive pills in a row. This served as baseline knowledge before exposing the women to one of the graphic or the PPI text-based instructions.

Women who indicated that they use(d) 21-day pill packs were shown eight scenarios, whereas their 28-day pack counterparts were shown 10 scenarios, using their own pill brands to portray them. Respondents were asked to name all the steps one should take to avoid

### Table 1. Basic contents of missed pill instructions

<table>
<thead>
<tr>
<th>Contents of missed pill instructions</th>
<th>SPR graphic</th>
<th>WHO graphic</th>
<th>ECT graphic</th>
<th>PPI text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructions to contact provider for EC if missed pills</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Instructions for missing inactive pills</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Instructions for missing 2 or more pills</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Instructions for missing 1 pill</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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pregnancy for each of the 8–10 scenarios, using the instructions they were given. They were encouraged to refer to the instructions for as long and as often as needed to decide upon the appropriate course(s) of action, as would be the case if she herself had discovered the missed pills at home. This approach also went beyond merely asking her to read the instructions and then answer abstract questions, as it engaged her in a real decision-making process. The four instructions all contained eight directives that if given in the correct combination for a particular scenario (order not important) was considered a correct response. These directives were as follows:

- Take a pill as soon as you remember
- Throw away any (remaining) pills that were missed
- Take the next pill at the usual time
- Continue to take pills as usual, one each day
- Avoid sex or use condoms for 7 days/use back-up until seven active pills have been taken in a row
- Skip the next pill-free week/inactive pills and go straight to the next pack
- Use emergency contraception
- Consult a health provider

(i) Take a pill as soon as you remember
(ii) Throw away any (remaining) pills that were missed
(iii) Take the next pill at the usual time
(iv) Continue to take pills as usual, one each day
(v) Avoid sex or use condoms for 7 days/use back-up until seven active pills have been taken in a row
(vi) Skip the next pill-free week/inactive pills and go straight to the next pack
(vii) Use emergency contraception
(viii) Consult a health provider

Figure 1. Pill scenarios for testing of comprehensibility. Scenarios 1 and 6 illustrate missing one pill; Scenarios 2 and 9 illustrate missing inactive pills. Note that the latter scenarios would only appear in a 28-day pill regimen, because there are no inactive pills in the 21-day regimen. Scenarios 3, 4, 5, 7, 8 and 10 illustrate missing two or more active pills in a row and vary by the time of the cycle and the actual number missed. These differentiate most between the instruction types: Scenarios 3 and 10—missing five or more pills, but not in the crucial third week; Scenario 4—starting pack late by 2 or more days: everyone uses back-up, but only SPR and ECT do not instruct to take the 7 day break from hormones; Scenarios 5 and 8—missing 2 or more but not in third week: all use back-up, but only SPR and ECT do not instruct to take 7 day break from hormones; Scenario 7—missing 2 or more pills in the crucial third week: everyone, including ECT group, instructed to skip inactive pill week and start new pill pack.
The interviewer also asked each respondent whether or not the instructions helped her to respond to the scenarios, whether the instructions were understandable and whether the instructions were hard to understand.

The main outcome was comprehension scores based on the number of correct answers and the presence of extraneous answers for each missing pill scenario. Two scoring systems were used: an ‘all-or-none’ scoring system or a ‘middle’ ground scoring system, described below in Scoring comprehension of instructions.

The secondary outcomes were women’s rating of how useful the instructions were when responding to scenarios and how understandable they were on a scale from 1 to 10. We also asked respondents in an open-ended item what made, or may have made, the instructions difficult to understand.

A total of 864 current or past users of 21- and 28-day pill packs, equally allocated to each of the four types of instructions, were recruited from 12 study sites. The sample size was based on the assumption that participants exposed to the WHO SPR instructions (SPR graphic) would respond correctly 30% of the time to questions on what to do when pills are missed. It was also assumed that those exposed to the WHO simplified graphic instructions would correctly respond to the scenarios 60% of the time, those exposed to the PPI text-based version 40% of the time and those exposed to the ECT instructions 50% of the time. These estimates reflect the authors’ own expectations given the format (graphic versus text) and varying levels of complexity of the instructions. Thus, the sample of 864 participants would provide at least 90% power to detect the above-hypothesized differences in mean responses of clients assigned to each of the four instruction groups in a one-way fixed analysis of variance with an alpha level of 0.05.

Of the 432 study participants who were users of 21-day pill packs, 117 were randomized to the SPR graphic, 104 to the simplified WHO graphic, 114 to the ECT graphic and 97 to the PPI text. The corresponding figures among the 432 study participants who were 28-day pill pack users were 113, 112, 102 and 105 for the SPR graphic, WHO simplified graphic, ECT graphic and PPI text, respectively (Figure 2). All 864 participants were included in the analyses, as all were interviewed and completed the tasks that were asked of them.

Randomization: sequence generation, allocation concealment and implementation

The randomization of study participants to each of the four types of instructions was stratified by site and type of pill packs (21 or 28). The randomization manager developed the allocation sequence using a computer-generated random number generator. The sequence was generated using random permutation blocks with randomly selected block sizes and an equal allocation to each of the four types of instructions.

The assignments to instruction type were concealed in sequentially numbered, opaque sealed envelopes. The interviewers opened the envelopes only after participants were enrolled in the study and the informed consent process had been completed. Depending on whether the enrolled study participant was a 21- or 28-day pill pack user, the envelopes corresponding to the type of pill pack was opened. The lead statistician and data analyst were blinded to the instruction types until the outcome variables were constructed and primary analysis of effects of instructions was completed.

Scoring comprehension of instructions

Comprehension scores were based on the number of correct answers and the presence of extraneous (i.e. absent from those instructions) answers for each of the missing pill scenarios. We used two scoring plans—the all-or-none or the middle-ground scoring plan to compute comprehension scores. In the all-or-none scoring plan, the participant had to state all of the directives that are supposed to be mentioned for that scenario, as defined by that instruction type. If the participant mentioned any element that was not supposed to be there (i.e. extraneous), the answer was deemed incorrect. The only extraneous elements that were not penalized were ‘use emergency contraception’ and ‘consult a health provider’, as they were always optional courses of action in the four instruction types. The all-or-none score was calculated as a percentage.

The middle-ground scoring plan was designed to be more lenient. We focused on key elements or directives and did not penalize the participant if certain responses that may not have been essential for pregnancy prevention or that could have been implicitly understood by the pill user were not mentioned. For example, the absence of ‘throw away any pills that were missed’ and ‘continue to take pills as usual, one each day’ was not penalized as they would have been under the all-or-none scoring plan. However, we did penalize certain extraneous answers if they were incorrect as defined by a particular scenario and the type of instructions. We avoided subjective scoring that penalizing some but not other elements would occasion by developing a five-point categorical comprehension score for the middle-ground plan. This scoring scheme acknowledged the presence of penalties and the mention of correct elements without requiring the use of weights:

(i) No correct answer was given, regardless of whether or not a ‘penalized’ item was given
(ii) Some correct answers were given and at least one ‘penalized’ item was also given
(iii) Some correct answers were given and no ‘penalized’ item was given
(iv) All correct answers were given and at least one ‘penalized’ item was given
(v) All correct answers were given and no ‘penalized’ item was given

The primary outcomes for each scenario were tested for their general association with randomly assigned types of missed pill instructions. In implementing the statistical test of association, the types of missed pill instructions were specified as the strata, and central location sites were the clusters.

Statistical tests of the null hypothesis (i.e. no differences in comprehension scores by type of instructions) were performed using SAS, version 8.0, and were implemented as follows. We first tested the null hypothesis of equal mean scores among the missed pill instructions using the generalized estimating equations framework. We then specified independent pairwise tests of equality among the four types of missed pill instructions with the SPR graphic serving as the reference group. Because of multiple outcomes, any pairwise comparison was evaluated with significance level equal to 0.0167 instead of 0.05.

Results

Because the results for 21- and 28-day pack users were very similar, only the results from 28-day pack users are shown to present the results for inactive pill scenarios. However, we present demographic and other background information for participants using both pill pack types. In general, instruction groups across pill regimen types were comparable on selected demographic characteristics (see Table II). These women were between 28 and 30 years of age and had on average one child. The majority of women surveyed were single. Most respondents had formal education—the greater part having completed high school or college. This is in line with the high
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Educational level of Jamaicans in general: >90% of women aged 25–29 and 30–34 years have completed 10–12 years of high school or report having had post-secondary education (McFarlane et al., 2005). Between 61 and 76% reported receiving information from health professionals when obtaining pills for the first time, but around a quarter to one-third had not been counselled. For the most part, previous and current users were evenly divided between 21- and 28-day pill pack users.

When we examined baseline knowledge (i.e. before participants were given any instructions) of what to do when one versus two or more pills in a row are missed, we found that respondents readily knew what to do when one pill is missed. There was a decrease in the percentage of correct answers for what to do when two or more pills in a row are missed (see Table III).

Mean comprehension scores for 28-day users under the all-or-none scoring plan (see Table IV) were generally low. The mean, on average, was <50% with the exception of Scenario 1. Scenarios 1 and 6 are the most straightforward scenarios in which one pill was missed, but the scores for Scenario 6 were much lower than the scores for Scenario 1. The scores for the inactive pill scenarios, Scenarios 2 and 9, were by far the lowest of all. Comparisons across the instruction groups show the highest scores were generally in the ECT graphic group and the lowest scores were usually in the PPI text-only group. This is especially evident in scenarios where multiple pills are missed. In Scenarios 3, 4, 5, 8 and 10, the ECT group had the highest scores, and the difference between the groups in those scenarios was significant at $P < 0.01$. Using pairwise tests of equality between the four groups, we found the

Figure 2. CONSORT flow charts for (a) 21 day pill regimen and (b) 28 pill regimen. WHO 2001 Selected Practice Recommendation instructions; WHO graphic: WHO simplified instructions; ECT graphic: *Essentials of Contraceptive Technology* instructions; PPI text: patient package insert instructions.
significant differences were accounted for by the much higher scores of the ECT group relative to the other groups. Although significant in Table IV, subsequent pairwise tests of equality between the four groups for Scenario 7 were not significant.

Results for the less stringent middle-ground scoring plan, based on a categorical 1–5 score, followed the same pattern as the results for the all-or-none scoring plan. The highest scores were for Scenario 1. The ECT group generally had the highest and the PPI text group the lowest comprehension scores among the instruction groups, and again the lowest comprehension scores were for Scenarios 2 and 9, the inactive pill scenarios (see Table V). Of note is that in scenarios where significant differences were detected, they involved multiple missed pills and the ECT group had the highest comprehension scores (except for Scenario 7).

**Participant ratings of missed pill instructions**

Higher ratings of usefulness gravitated towards the simpler WHO and ECT graphic instructions. The PPI text instructions were rated as ‘not useful’ more often than the other instructions. This was the case for both 21- and 28-day pill pack users.

WHO’s simplified graphic instructions were rated as the most comprehensible of the four instructions. The ECT and the SPR graphic instructions are also rated as more comprehensible than the PPI text instructions. This finding held for both 21- and 28-day pill pack users.
Table II. Background of study participants by pill regimen and instruction group

<table>
<thead>
<tr>
<th>Background of study participants (selected characteristics)</th>
<th>21-day pill regimen</th>
<th>28-day pill regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>Marital status (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>65</td>
<td>62</td>
</tr>
<tr>
<td>Married</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Common-law union</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Separated/widowed/divorced</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Educational level (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finished high school</td>
<td>51</td>
<td>50</td>
</tr>
<tr>
<td>Finished post secondary/ university</td>
<td>45</td>
<td>44</td>
</tr>
<tr>
<td>Source of counselling/information when obtained pill for the very first time (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health professional*</td>
<td>66.7</td>
<td>61.1</td>
</tr>
<tr>
<td>Not counselled</td>
<td>29.9</td>
<td>31.9</td>
</tr>
<tr>
<td>Friend/family member</td>
<td>3.4</td>
<td>6.2</td>
</tr>
<tr>
<td>No response</td>
<td>0</td>
<td>0.9</td>
</tr>
<tr>
<td>Pill user status (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous user</td>
<td>46</td>
<td>56</td>
</tr>
<tr>
<td>Current user</td>
<td>54</td>
<td>44</td>
</tr>
</tbody>
</table>


*Includes doctor, nurse and pharmacist.

Table III. Baseline knowledge of what to do if pills are missed

<table>
<thead>
<tr>
<th>Correct response for what to do if</th>
<th>21-day pill regimen</th>
<th>28-day pill regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of missed pill instruction</td>
<td>SPR graphic (n = 117)</td>
<td>WHO graphic (n = 104)</td>
</tr>
<tr>
<td>You miss one pill (%)</td>
<td>93</td>
<td>87</td>
</tr>
<tr>
<td>You miss two or more pills in a row (%)</td>
<td>14</td>
<td>19</td>
</tr>
</tbody>
</table>


Table IV. Mean comprehension scores based on the all-or-none scoring plan for 28-day pill pack users

<table>
<thead>
<tr>
<th>Missed pill scenarios</th>
<th>Type of missed pill instruction</th>
<th>SPR graphic (n = 113)</th>
<th>WHO graphic (n = 112)</th>
<th>ECT graphic (n = 102)</th>
<th>PPI text (n = 105)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1: One pill in week 2</td>
<td>72</td>
<td>75</td>
<td>69</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Scenario 2: Two inactive pills</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Scenario 3: Six pills between weeks 1 and 2*</td>
<td>41</td>
<td>50</td>
<td>51</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Scenario 4: First 3 pills of new pack*</td>
<td>49</td>
<td>53</td>
<td>55</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Scenario 5: Three pills in week 2*</td>
<td>25</td>
<td>49</td>
<td>55</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Scenario 6: One pill in week 3</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Scenario 7: Two pills in week 3</td>
<td>33</td>
<td>43</td>
<td>39</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Scenario 8: Four pills between weeks 1 and 2*</td>
<td>50</td>
<td>48</td>
<td>55</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Scenario 9: One inactive pill</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Scenario 10: Five pills in week 2*</td>
<td>38</td>
<td>49</td>
<td>54</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>


*P < .01.
The majority of 21- and 28-day pill pack users said there was nothing hard to understand about the instructions. For those who reported having difficulty, however, having too many things to take note of created problems for them. The WHO simplified graphic instructions were considered more user-friendly than the other three, as <5% of women in that group mentioned having difficulty with absorbing all the information presented. In contrast, 31% of 21-day users and 21% of 28-day users in the PPI text group reported having difficulty due to the multitudinous instructions to follow.

### Discussion

We found that graphic instructions were easier to understand than text-only ones (PPI). Furthermore, the simplified forms of graphic instructions (ECT, WHO) were easier to comprehend than the SPR graphic version. Subsequent ratings of usefulness and comprehensibility of these instructions by the same study participants confirmed these results.

We also discovered that most women correctly specify what to do when one pill is missed but do poorly identifying steps to take when multiple pills are missed, suggesting that as instructions incorporate more steps or as each step becomes dependent on the previous, instructions become less understandable to pill users. This is particularly noteworthy as these pill users, and Jamaican women in general, tend to be well educated. It certainly revealed that these instructions were too complicated, even for highly literate women.

For users of 28-day pill packs, we found that there was no differentiation between active and inactive pills. That is, women mentioned taking the same steps to avoid pregnancy with inactive pills as with active ones. Perhaps with so much information to digest on the instruction sheets, most women were unable to appreciate the distinction between hormonal and non-hormonal pills.

These findings were presented at the WHO’s SPR meeting in Geneva in April 2004 at their request. We recommended that the working group revise the 2001 SPR instructions to conform to the findings of the study. Accordingly, we suggested reducing the comprehensiveness of medical information for the sake of simplicity and improved comprehensibility. Given the findings from our comparisons of graphic and text-based instructions, we also recommended that WHO strive for simple graphic presentations, especially for multiple missed pill instructions. The WHO working group accepted our recommendations and immediately drafted new instructions for dissemination. In their new instructions—based on use of combined oral contraceptives of 30–35 μg of ethinyl estradiol—the directives are divided into three parts: (i) what to do if she misses one or two active (hormonal) pills, (ii) what to do if she misses three or more active (hormonal) pills and (iii) what to do if she misses any inactive (non-hormonal) pills (WHO, 2005). These instructions have also been disseminated by the Faculty of Family Planning and Reproductive Health Care Clinical Effectiveness Unit (2005) and by USAID through James Shelton’s e-mail distribution list for Pearls of Contraception (7 December 2004). These three mutually exclusive steps in the revised instructions have yet to be rendered in graphic format but hold the promise of being more comprehensible than its antecedents.

### Acknowledgements

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### Supplementary material

Supplementary data are available at http://humrep.oxfordjournals.org/.
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