Inadequate Presentation of Evidence in an Internal Medicine Conference

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Abstract
Background
Studies have found that physicians are more likely to consider therapy effective when information is presented in relative terms (e.g., RRR, OR, HR) rather than in absolute terms (ARR, NNT). In an earlier study of family physician (FP) therapeutics conferences, we found that speakers presented data more frequently in relative than absolute terms, but most frequently in general terms such as frequencies, percentages, graphs, and P-values with no data.

Objectives
To study a national internal medicine conference and determine 1) how completely research data supporting therapeutic recommendations is reported in relative and absolute terms; and 2) how well learners and speakers understand relative and absolute terms.

Methods
We videotaped and analyzed 14 presentations from the 2011 Canadian Society of Internal Medicine Annual Scientific Meeting. Learners and teachers at the meeting completed an online statistical comprehension survey.

Results
Of 549 slides we analyzed, 148 made therapeutic recommendations and 145 presented research data. Of those 145 slides, 81% presented data in general terms, 31% in relative terms, and 3% in absolute terms. For RRR, ARR, NNT and CI, approximately 40% of learners and 50% to 70% of speakers considered they understood these terms well enough to explain to them to others. Approximately 35% of learners and 43% of speakers answered questions about RRR, ARR, NNT, OR and HR correctly.

Conclusions
Learners who attended this conference were not provided with the statistical information they needed to make fully informed therapeutic decisions. There was inadequate knowledge of basic statistical terms among both learners and teachers.
Résumé

Contexte
D’après les études, les médecins sont plus enclins à considérer un traitement comme efficace lorsque l’information s’y rattachant est présentée en valeurs relatives (p. ex. : RRR, RRE, RH) plutôt qu’en chiffres absolus (RRA, NST). Dans une étude sur les conférences portant sur les thérapeutiques et s’adressant aux médecins de famille, nous avons constaté que les conférenciers présentent l’ensemble des données plus fréquemment en valeurs relatives qu’en chiffres absolus, quoique plus souvent en termes généraux tels : fréquences, pourcentages, graphiques, valeurs p, et ce, en l’absence des données collectées.

Objectifs
Étudier une conférence nationale de médecine interne et déterminer : 1) dans quelle mesure les données de recherche appuyant les recommandations relatives aux traitements et présentées en valeurs relatives et en chiffres absolus sont-elles complètes; et 2) dans quelle mesure les participants et les conférenciers comprennent-ils les notions de valeurs relatives et de chiffres absolus.

Méthode

Résultats
Sur les 549 diapositives que nous avons analysées, 148 comportaient des recommandations thérapeutiques et 145 présentaient des données de recherche. De ces 145 diapos, 81 % présentaient les données en termes généraux, 31 % en valeurs relatives et 3 % en chiffres absolus. En ce qui a trait aux notions de RRR, RRA, NST et de LC, environ 40 % des apprenants et de 50 à 70 % des conférenciers considéraient comprendre suffisamment bien ces notions pour pouvoir les expliquer. Or, environ 35 % des apprenants et 43 % des conférenciers ont répondu correctement aux questions portant sur les notions de RRR, RRA, NST, RRE et RH.

Conclusions
D’une part, les apprenants qui ont participé à cette conférence n’ont pas reçu l’information statistique nécessaire pour être en mesure de prendre des décisions éclairées en matière de thérapeutiques. D’autre part, il s’avère que les enseignants, tout comme les apprenants, comprennent mal les données de base en matière de statistique.

Abbreviations
AR – Absolute risk
ARR, ARI – absolute risk reduction, increase
CI – confidence interval
CME – continuing medical education
FP – family physician
HR – hazard ratio
NNT, NNH – number needed to treat, harm
OR – odds ratio
RR – relative risk
RRR, RRI – relative risk reduction, increase
Inadequate Presentation of Evidence in an Internal Medicine Conference

Introduction

Large conferences are a major source of CME for specialist physicians. It is important that information presented in them be evidence-based and present data completely since studies have found that physicians are more likely to consider therapy effective when information is presented in relative terms (e.g., RRR, OR, HR) rather than in absolute terms (ARR, NNT). Forrow et al found that 97 out of 235 U.S. physicians (41%) indicated a stronger inclination to treat patients after receiving data presented as the relative change in outcome rate (p<0.001).1 Naylor found that Canadian specialists were least likely to rate treatments as effective when data were presented as NNT, and most likely to rate treatments as effective when data were presented as RRR.2

A question that arises is which, if any, format is correct for presenting data. The authors of these papers and the National Institutes of Health suggest that no one measure provides the information necessary for physicians to make an informed decision about the results of clinical trials. They suggest that data be presented in absolute and relative terms. Specialists’ understanding of absolute and relative terms appears to be less than optimal. Studies assessing specialists’ understanding of these terms have found that 45%-82% understand ARR, 50%-71% RR, and 30%-57% OR.5,6,7 In a study of Canadian specialists, 35%, 25% and 12.5% correctly defined ARR, RRR and OR respectively.8

In an earlier study of FP therapeutics conferences, we found that speakers presented data more frequently in relative than absolute terms, but most frequently in general terms such as frequencies, percentages, graphs, and P-values with no data. Of the 1367 PowerPoint slides we analyzed, 225 presented data in general terms, 50 in relative terms and 19 in absolute terms.9 In this paper, we report the results of a repeat of this study with internal medicine specialists. Our research questions were: 1) how completely is research data supporting therapeutic recommendations reported in relative and absolute terms and 2) how well do learners and speakers understand relative and absolute terms?

Methods

We studied internal medicine specialist speakers and learners at the Canadian Society of Internal Medicine Annual Scientific Meeting held in 2011 (hereafter referred to as CSIM Meeting). The Ethics Review Board of Dalhousie University approved the study.

Question 1: How is Research Data Presented?

We sent all 68 speakers a letter informing them that we would be videotaping their CSIM presentation for a research study. The letter explained that we would disclose the purpose of the study after the conference because we wished speakers to present as they normally do. Five speakers indicated that they did not want their presentation to be videotaped. After the conference, we informed speakers about the purpose of the study and invited 29 speakers with eligible presentations that included therapeutic recommendations to participate. We received consent from 17 out of 29 speakers (59%). Our final sample included 14 presentations as we removed three presentations from the analysis because of their lack of emphasis on therapies. The rating tool was created in Microsoft Excel and automatically summed the slides in each category and was used in a previous study involving family physician conferences.6 The rating tool is available from the lead author.

For each presentation, 2 researchers (MA, BO) independently analyzed the digital recording and counted slides that presented data in relative terms (OR, HR, RR, RRR, RRI), absolute terms (ARR, ARI, NNT, NNH) or general terms (frequencies, percentages, graphs, only P-values, prevalence, events per 1000 person-years).

Slides presenting quantitative data but not providing a reference were not counted as research data. Slides not directly relevant to the presentation were excluded (title slides, cartoons, and irrelevant graphics). If the digital recordings were of inadequate quality to rate slides, we reviewed PowerPoint files, which provided full details of the content. The 2 researchers then reviewed all slides together and to resolve any discrepancies in rating through discussion. The final decision on these discrepancies was made through discussion with a third author (DS). Finally, the same 3 authors reviewed presentations to determine which could be improved through more complete presentation of research data.

Question 2: How Well Do Learners and Speakers Understand Relative and Absolute Terms?

We developed a questionnaire using items from McColl et al10 to assess speaker and learner understanding of research terms (See Appendix). The questionnaire was available online throughout the conference and for two weeks afterwards. Conference moderators made repeated requests throughout the meeting to encourage learners and speakers to complete the questionnaire. After the conference, we sent an email to learners and speakers reminding them to complete the questionnaire. We compared questionnaire responses of learners and speakers with Chi-square using Fisher’s exact test since some cells contained fewer than 5 responses. Questionnaire data was analyzed using SPSS v 18.
Results

Question 1: How is Research Data Presented?
We analyzed 549 slides from 14 presentations. Of those slides, 148 made therapeutic recommendations and 145 presented research data. Of these 145 slides, 117 (81%) presented data in general terms, 45 (31%) in relative terms, and 4 (3%) in absolute terms. Two of the 4 slides presenting absolute terms were in 1 presentation and showed NNT. Fifty-two (36%) slides presented 95% CIs.

We deemed that 21 slides in 9 presentations could have presented data more completely which would have aided understanding of the magnitude of treatment effect. Of these 21 slides that could have been improved, in 16, the improvement was the addition of NNT or NNH. Four presentations did not have specific slides that could be improved by the addition of absolute terms; however, these presentations could have been improved by the addition of more research data (Table 1).

Question 2: How Well Do Learners and Speakers Understand Relative and Absolute Terms?
We received questionnaire responses from 94 learners (response rate 29%) and 34 speakers (response rate 50%). Seventy (74%) of the learners were IM specialists and 22 (23%) were residents. All but 4 speakers were internal medicine specialists. Approximately 50% of speakers and learners were male and the mean time in practice of both groups was 13.4 years. Twenty-three learners and 7 speakers left the survey at the question asking them to calculate statistical terms.

Table 2 shows results of questions asking speakers and learners to rate their understanding of statistical terms. For RRR, ARR, NNT and CI, approximately 40% of learners and 50% to 70% of speakers considered they understood these terms well enough to explain to others. For OR and HR, approximately 15% of learners and 25% of speakers considered they understood these terms well enough to explain to others. Approximately 35% of learners and 43% of speakers answered questions about RRR, ARR, NNT, OR and HR correctly (Table 3). Regarding the amount of emphasis that should be placed on presenting research results when making therapeutic recommendations, 66% of learners and 59% of speakers rated this as 4 or 5 on 5-point Likert scale (data not shown.)

Discussion
We found that, in this CSIM meeting, speakers were much more likely to present research data in general terms than in relative terms. Very little data were presented in absolute terms; only 4 out of 145 (3%) slides that presented research data presented ARR/ARI or NNT/NNH. Confidence intervals were frequently shown on slides but not emphasized in the live presentations. Compared to our previous study of FP CME programs, in the current study a greater percentage of slides presenting research data presented that data in relative terms (31% vs 19%) and with 95% CIs (36% vs 9%). However, the FP programs presented more slides with absolute terms than the IM program (3% vs 7%). There were similar percentages of data presented in relative terms (81% vs 84%). We know of no other study with which to compare our results.

Learners rated their understanding of RRR, ARR, NNT and HR lower than speakers but there was no statistically significant difference between learner and speaker ability to calculate or answer a question about these terms. Approximately one-third of learners and one-half of speakers correctly answered questions about the statistical terms. Both learners and speakers rated their understanding of HR the lowest of any of the statistics we asked about. This is concerning since many results are presented as HRs. In a study of gastroenterologists, Buscaglia et al also found that HR was the least understood term. Poolman et al found that Dutch orthopedic surgeons rated their knowledge of OR the lowest of the statistics but did not ask about HR. Danish specialists rated their knowledge of ARR lower than OR.

A strength of our study is that we used a rigorous approach to evaluate the speakers’ presentations. The tool we have developed for rating slides was used in a previous study and all presentations were reviewed independently by two researchers with expertise in evidence-based medicine. Also, we did not rely only on PowerPoint files to rate the slides presented but also reviewed video recordings of the live presentations. We found that speakers did not mention measures of treatment effect unless they were presented on the slides. However, we did find that speakers omitted some slides that were in their PowerPoint file and we did not include those slides in our ratings. A weakness of the study is that we reviewed a limited number of presentations from a single scientific conference so it may not be possible to generalize to other conferences and specialties. In addition, we did not address other aspects of critical appraisal such as internal and external validity which must be considered when evaluating research results since this was beyond the scope of our study.

Our findings indicate an inadequate knowledge of basic statistical terms among both learners and teachers at the CSIM meeting. This knowledge is necessary for clinicians to make rational decisions about therapy. Also, patients are becoming more active in their decision-making and physicians are encouraged to engage their patients in shared decision-making. Statistical literacy is essential for clinicians and their
patients to make informed decisions about treatment risks and data should be presented and discussed using relative and absolute terms.12,13 A recent Cochrane review reported both health professionals and consumers perceived interventions to be more effective when expressed as RRR compared to ARR and NNT with the suggestion that the formal training of professionals has no effect on their interpretation of statistics.14 Physicians who lack proficiency in clinical interpretation of absolute and relative measures should undertake professional development to gain this proficiency, and use it in their clinical decision-making to maintain their expertise.

Several studies have shown that physicians are more likely to prescribe therapies or consider them effective when results are presented in relative terms rather than absolute terms.12,13,14 Organizers of, and attendees at, educational events should insist that presenters provide absolute as well as relative data. Presenters who teach in educational events, whether for FP’s or their internal medicine colleagues, should ensure their presentations include these data. To facilitate these changes, journals should require that authors provide absolute as well as relative measures of treatment effect.

We realize that creating PowerPoint slides showing these measures is time-consuming and have developed an online tool that creates such slides at http://bit.ly/Katie_Calc_Login. A sample slide created by the tool is in the Figure. We have shared our findings with the Canadian Society of Internal Medicine which has offered to repeat the study at future meetings as a quality improvement measure.

**References**


**Figure:** Sample slide produced by online tool at http://bit.ly/Katie_Calc_Login

### Dabigatran vs Warfarin in Patients with Atrial Fibrillation – Results

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Event rate</th>
<th>RRR</th>
<th>ARR</th>
<th>Time (yrs)</th>
<th>NNT 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke embolism</td>
<td>3.3%</td>
<td>2.2%</td>
<td>33.3%</td>
<td>1.1%</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Connolly SJ NEJM 2009

For this outcome the intervention shows benefit. (ARR = absolute risk reduction, RRI = relative risk reduction, NNT = number needed to treat)
Table 1. Numbers of slides making therapeutic recommendations and presenting research data in general, relative, and absolute terms, and with 95% confidence intervals and which could be improved by the addition of more complete data

<table>
<thead>
<tr>
<th>Number slides rated</th>
<th>Made therapeutic recommendations</th>
<th>Presented research data</th>
<th>General terms*</th>
<th>Relative terms#</th>
<th>Absolute terms+</th>
<th>95% CI</th>
<th>Could be improved</th>
</tr>
</thead>
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<td>17</td>
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<td>10</td>
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<td>13</td>
<td>4 slides need NNT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 slides need CI of NNT</td>
</tr>
<tr>
<td>82</td>
<td>18</td>
<td>30</td>
<td>27</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td>2 slides need NNT</td>
</tr>
<tr>
<td>45</td>
<td>13</td>
<td>17</td>
<td>9</td>
<td>14</td>
<td>0</td>
<td>8</td>
<td>1 slide needs data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 slide needs NNH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1 slide needs absolute rates instead of just RRR</td>
</tr>
<tr>
<td>28</td>
<td>8</td>
<td>17</td>
<td>12</td>
<td>7</td>
<td>0</td>
<td>5</td>
<td>1 slide needs ARR and NNT</td>
</tr>
<tr>
<td>45</td>
<td>3</td>
<td>19</td>
<td>18</td>
<td>4</td>
<td>0</td>
<td>6</td>
<td>2 slides need absolute risks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 slide needs data from study cited</td>
</tr>
<tr>
<td>37</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>2 slides need NNH and CIs</td>
</tr>
<tr>
<td>57</td>
<td>30</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1 slide needs NNT</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1 slide needs NNT</td>
</tr>
<tr>
<td>53</td>
<td>19</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1 slide needs NNT</td>
</tr>
<tr>
<td>40</td>
<td>9</td>
<td>13</td>
<td>13</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1 slide needs NNT</td>
</tr>
<tr>
<td>39</td>
<td>15</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2 slides need NNT</td>
</tr>
<tr>
<td>18</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2 slides need NNT</td>
</tr>
<tr>
<td>27</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2 slides need NNT</td>
</tr>
<tr>
<td>15</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2 slides need NNT</td>
</tr>
<tr>
<td>549</td>
<td>148</td>
<td>145</td>
<td>117</td>
<td>45</td>
<td>4</td>
<td>52</td>
<td>2 slides need NNT</td>
</tr>
</tbody>
</table>

* general terms = frequencies, percentages, graphs, only P-values, prevalence, events per 1000 person-years
# relative terms = OR, HR, RR, RRR, RRI
+ absolute terms = ARR, ARI NNT, NNH

Topics presented in Table 1 (presented separately to maintain anonymity of speakers):

- Biologic Agents for Rheumatic Disease
- ACS Cases and Pearls
- Top 5 GIM-relevant Papers in the Past Year
- Osteoporosis
- Management of Hyperglycemia in Hospitalized Patients
- Drugs in Pregnancy and Lactation
- Hypothyroidism
- CCS Antiplatelet Guidelines
- Palliative Care in Heart Failure
- Controversies in Venous Thromboembolism
- CCS Workshop Heart Failure Update
- Hot Topics in Drug Safety
- Summary of ACS Recommendations
- Heart Failure 101
Table 2. Percent of learners (n=94) and speakers (n=34) responses to perceived understanding of measures of treatment effect

<table>
<thead>
<tr>
<th></th>
<th>Understand and could explain to others</th>
<th>Some understanding</th>
<th>Don’t understand but would like to</th>
<th>Don’t understand and it would not be helpful</th>
<th>No response</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RRR</strong></td>
<td>Learner 36%</td>
<td>26%</td>
<td>8%</td>
<td>1%</td>
<td>29%</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Speaker 59%</td>
<td>18%</td>
<td>0%</td>
<td>0%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td><strong>ARR</strong></td>
<td>Learner 39%</td>
<td>26%</td>
<td>4%</td>
<td>1%</td>
<td>30%</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>Speaker 68%</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td><strong>NNT</strong></td>
<td>Learner 45%</td>
<td>23%</td>
<td>1%</td>
<td>0%</td>
<td>31%</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>Speaker 66%</td>
<td>7%</td>
<td>2%</td>
<td>0%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>Learner 19%</td>
<td>31%</td>
<td>20%</td>
<td>1%</td>
<td>29%</td>
<td>0.092</td>
</tr>
<tr>
<td></td>
<td>Speaker 25%</td>
<td>46%</td>
<td>7%</td>
<td>0%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td><strong>HR</strong></td>
<td>Learner 13%</td>
<td>33%</td>
<td>24%</td>
<td>1%</td>
<td>29%</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>Speaker 21%</td>
<td>52%</td>
<td>5%</td>
<td>0%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td><strong>CI</strong></td>
<td>Learner 39%</td>
<td>23%</td>
<td>7%</td>
<td>2%</td>
<td>29%</td>
<td>0.443</td>
</tr>
<tr>
<td></td>
<td>Speaker 52%</td>
<td>23%</td>
<td>2%</td>
<td>0%</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

RRR, relative risk reduction; ARR, absolute risk reduction; NNT, number needed to treat; OR, odds ratio; HR, hazard ratio; CI, confidence interval; *p-value for differences between learner and speaker responses conducted using Chi-square, Fisher’s exact test.

Table 3. Percent of learners (n=94) and speakers (n=34) correct responses about measures of treatment effect

<table>
<thead>
<tr>
<th></th>
<th>Answered correctly</th>
<th>No response</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RRR</strong></td>
<td>Learner 34%</td>
<td>40%</td>
<td>0.103</td>
</tr>
<tr>
<td></td>
<td>Speaker 39%</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td><strong>ARR</strong></td>
<td>Learner 38%</td>
<td>44%</td>
<td>0.509</td>
</tr>
<tr>
<td></td>
<td>Speaker 46%</td>
<td>46%</td>
<td></td>
</tr>
<tr>
<td><strong>NNT</strong></td>
<td>Learner 36%</td>
<td>44%</td>
<td>0.419</td>
</tr>
<tr>
<td></td>
<td>Speaker 41%</td>
<td>48%</td>
<td></td>
</tr>
<tr>
<td><strong>OR and HR are both relative measures</strong></td>
<td>Learner 32%</td>
<td>27%</td>
<td>0.115</td>
</tr>
<tr>
<td></td>
<td>Speaker 46%</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

RRR, relative risk reduction; ARR, absolute risk reduction; NNT, number needed to treat; OR, odds ratio; HR, hazard ratio; CI, confidence interval; *p-value for differences between learner and speaker responses conducted using Chi-square, Fisher’s exact test.

Respondents were asked to calculate RRR, ARR and NNT based on a hypothetical study where event rate in the active group and placebo group was 8% and 6% respectively. They were also asked if OR and HR are both relative measures of treatment effect (True/False).
Appendix Statistical Comprehension Questionnaire

EVIDENCE-BASED MEDICINE QUESTIONNAIRE

Please indicate:  □ Male       □ Female       Years in practice? (approx.) _____ yrs.
Your profession:  □ Internal Medicine Specialist □ Yes □ No

Other specialist (please specify): ____________________ Other (please specify): ____________________

INSTRUCTIONS: The information required to calculate questions 1-3 is provided below. Please do not guess.
If you are not sure, indicate “I don’t know”.

A randomized control trial examined the effect of a drug for lowering LDL cholesterol in patients with coronary heart disease. The outcome was myocardial infarction.

- 1000 patients received the drug.  60 (6%) had an MI.
- 1000 patients received placebo.  80 (8%) had an MI.

1. What is the number needed to treat (NNT) to prevent 1 myocardial infarction?
   _____ patients  □ I don’t know

2. What is the absolute risk reduction (ARR) for myocardial infarction?
   _____ %  □ I don’t know

3. What is the relative risk reduction (RRR) for myocardial infarction?
   _____ %  □ I don’t know

4. The odds ratio and hazard ratio are both relative measures of the effect of a therapy.
   □ True  □ False  □ I don’t know

RATE YOUR FAMILIARITY with research terms (a) – (f) in the table below:

<table>
<thead>
<tr>
<th></th>
<th>Understand and could explain to others</th>
<th>Some understanding</th>
<th>Don’t understand but would like to</th>
<th>Don’t understand and it would not be helpful for me to understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Relative risk reduction</td>
<td>□</td>
<td>□</td>
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<tr>
<td>b. Odds ratio</td>
<td>□</td>
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<td>c. Hazard ratio</td>
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<tr>
<td>d. Absolute risk reduction</td>
<td>□</td>
<td>□</td>
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<tr>
<td>e. Number needed to treat</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<tr>
<td>f. Confidence intervals</td>
<td>□</td>
<td>□</td>
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</tbody>
</table>

Have you completed an evidence-based medicine course/workshop in the last 10 years?
□ Yes  □ No  If yes, please indicate where: (check all that apply) □ Undergraduate  □ Postgraduate  □ CME
□ Other (specify): ____________________

How much emphasis should CME speakers place on presenting research results when making therapeutic recommendations?

Very little--------------------------------------------Some------------------------------------------A lot

1  2  3  4  5

□  □  □  □  □

Comments: