

**E-mail Sent to AHRQ Staff November 12, 2007 (slightly edited)**

My APHA presentation (available at [APHA 2007](http://apha.confex.com/apha/135am/techprogram/paper_153201.htm) and [http://apha.confex.com/apha/135am/techprogram/paper\\_153201.htm](http://apha.confex.com/apha/135am/techprogram/paper_153201.htm)) materially disagrees with the disparities measurement approach in the NHDR – mainly for its failure to recognize that as adverse outcomes decline in prevalence relative differences in experiencing them tend to increase while relative differences in avoiding them tend to decline. An implication of that failure is that as the healthcare improves, healthcare disparities will be perceived as increasing. I hope eventually to cause AHRQ and all governmental and nongovernmental entities studying health or healthcare disparities to substantially alter the way they study these issues.

I realize, however, that AHRQ is busily working to put out the 2007 disparities and quality reports, and is unlikely to rethink fundamental issues before doing so. And in my recent review of these reports, I noticed a number of errors/issues largely unrelated to my central point. So I thought I should bring the matters to your attention in hopes that, if in fact I have identified an error in the 2006 report, the same errors can be avoided (or issues addressed) in the 2007 report.

The errors/issues in the disparities report concern:

- (1) treatment of percentage point changes as percent changes (possibly very important, particularly if AHRQ did not do what it intended to do)
- (2) statements that odds differences reflect risk differences
- (3) counts of change over time
- (4) general clarification/amplification matters
- (5) clerical errors unlikely to be repeated in the 2007 report but still warranting attention (and possible correction in the existing reports)

Further, I gave only limited attention to the National Healthcare Quality Reports (NHQR), since for the most part they do not implicate my principal concern with the disparities reports (though the analyses of across-state variance do implicate that concern since they would be expected to show a correlation between the lowest adverse outcome rates and the greatest across-state variance). But I did notice a few errors/issues in the quality report.

These concern:

- (1) general clarification/amplification matters;
- (2) a clerical error unlikely to be repeated in the 2007 report but still warranting attention (and possible correction in the existing report)

These matters involving the disparities report are addressed in Section A and the matters involving the quality report are addressed in Section B.

**A. DISPARITIES REPORT**

***1. Percentage point changes as percent changes.***

There only two instances in the report where the size of a change is reported. Those occur at page 6, as follows:

From 2000 to 2003, the proportion of adults who received care for illness or injury as soon as wanted decreased for Whites (from 16.2% to 13.4%) but increased for Blacks (from 17.5% to 18.4%). This corresponds to an increase of 9.8% per year in this disparity. However, from 2000 to 2004, the rate of new AIDS cases remained about the same for Whites (from 7.2 to 7.1 per 100,000 population age 13 and over) but decreased for Blacks (from 75.4 to 72.1 per 100,000 population), corresponding to a decrease of 7.9% per year in this disparity.

Just for clarity, I note that I previously brought to [ ] attention that the first figure are actually figures for failing to receive care (and hence the disparity is adverse to blacks rather than whites). But my instant point involves the fact that what are called a 9.8% yearly increase and a 7.9% yearly decrease are really change of “9.8 percentage points” and “7.9 percentage points,” and the yearly changes actually are 122 percent and 0.9 percent. When a rate of 60 percent increases to 70 percent, one typically calls that a 16.7 “percent” or “percentage” increase (10/60) (or, from the opposite perspective, a 25.0 “percent” or “percentage” decrease (10/40)). Such, for example, is how overall changes are described in the NHQR. But if one were to instead cite the simple result of subtracting 60 from 70, one ought to call that a “percentage point” change. Whether or not the latter usage is the only technically correct one, it is useful to employ such usage simply to avoid confusion.

The same holds when one is talking about a change in disparity. When one group’s rate is initially 60% higher than another’s (a relative risk (RR) of 1.6) and the RR then increases to 1.7, the increase would typically be called a 16.7 percent increase in the disparity – or, in absolute terms, a 10 percentage point increase. I think you’ll find that this is precisely the language used in the discussion of Tables 3 and 4 in the 2005 National Center for Health Statistics (NCHS) report on measuring disparities (Keppel K., Pamuk E., Lynch J., et al. 2005. Methodological issues in measuring health disparities. Vital Health Stat 2 (141) ([Keppel 2005](#))).

According the NCHS’s approach and usage, the first disparity change would be called a 122% yearly increase and the second would be called a 0.9% yearly decrease. As discussed with respect to Table D of the NCHS report, such figures are derived by dividing the percentage point change by the initial relative difference (actually RR -1). In the former case, the change is from an RR 1.08 to an RR of 1.37 – a 360% increase (29/8) over three years. In the latter it is from an RR of 10.472 to an RR of 10.144 – a 3.5% decrease (328/9472) over four years.

Initially, I thought that this might simply be some mistake in the calculation, or description, of these particular figures, and that such error might not affect the way such things as the 1-5% and >5% changes in disparity were calculated. But note xix at page 5 makes clear that the report is supposed to calculate what it terms the “percent” changes this way – i.e., by taking the percentage point difference without dividing it by the

original excess risk. Notwithstanding that footnote, however, I am not sure what AHRQ really wants to do here, inasmuch as NCHS would do it differently. It also would seem inconsistent with the quality report in the sense that, as noted, a “percent” change in an overall rate in the quality report is derived by dividing the percentage point change by the base year rate, while a “percent” change in a disparity in the disparities report is simply the percentage point change. But, in any case, I think it is potentially quite misleading to call the changes identified above “percent” change rather than “percentage point” changes. Told that the racial disparity in AIDS rates declined by 32 percent over 4 years, most people would regard that as major progress in reducing the disparity. (If the change was instead from an RR of 10.472 to 9.472 and reported as 100% decrease in disparity, most people would regard that to mean the disparity was completely eliminated.) But I do not think that, once understanding the numbers, many people would regard the actual change referenced at page 6 as very meaningful.

[Note added with the posting of this item in March 2009: Whereas the above points concerning references to percentage points changes as percent changes hold, it is clear that the measuring of changes in disparities in terms of percentage point changes accords with the approach of NCHS for measuring progress in achieving the health disparities reduction goals of Healthy People 2010.]

Further, at page 135, the 2006 report states:

Between 2001 and 2004, hospitalizations for uncontrolled diabetes among AI/ANs 18 years and older in IHS, tribal, and contract hospitals declined 15% from 54.6 to 40.5 per 100,000 population in IHS service areas (Figure 4.7, left).

This passage raises a somewhat different issue, and I am not sure I have interpreted the matter correctly. But, while 54.6 minus 40.5 is 14.1 rather than 15, it nevertheless seems that the report is treating 54.6 and 40.5 as percents and then treating the difference as a percent decline. These figures are not percents but number per 100,000, or, respectively, 0.00055 (or 0.06 percent) percent and 0.00041 (or 0.04 percent). Thus, the decline is far less than even one percentage point. In any case, as I believe would be done in the NHQR, it seems that the correct procedure would be to divide the change (the 14.1 per 100,000 decline) by the original figure (54.6). Thus, there would be a 25.8 percent decrease rather than a 15 percent decrease.

## ***2. Discussion of odds differences as risk differences***

The report presents certain disparities after multivariate adjustment for confounding factors at page 48 and 109. In both cases, the report explains that the disparities are odds ratios. Elsewhere (at 24) the report is also clear that these are odds ratios. Yet, both at page 48 and at page 109, after the describing the result as odds ratios, the report then states that differences in odds mean differences in chance, and thereafter the odds differences are described in terms such as “23% less likely.”

This occurs, moreover, in a context where the underlying rates are in ranges where odds ratios, rather than approximating relative risks, show values that are much higher than the

relative risk (as discussed, say, in Schwartz: Schwartz LM, Woloshin S, Welch HG. Misunderstandings about the effects of race and sex on physicians' referrals for cardiac catheterization. *N Engl J Med* 1999;341:279-283.). As suggested by Swartz et al., this is a situation where it would be appropriate to translate the odds differences into differences in chances. For example, equating odds differences with risk differences, the report at page 109 states that the poor are 37% less likely to have a usual primary care provider; but by my calculations indicate that they are actually only 11% less likely. References to odds ratios as relative risks is an increasing problem in medical literature, in some cases without even disclosure that the figures are odds ratios rather than relative risks. While the NHDR makes clear that the figures are in fact odds ratios, the subsequent reference to the differences as differences in chance seems serious because it occurs in an apparent effort to clarify the meaning of a term for the lay reader.

### ***3. Counts of changes in disparities over time***

Without belaboring how I reached this understanding, my impression is that the discussion on pages 130 of 11 cases where disparities lessened and 16 cases where disparities increased include, without distinction, situations where (1) the disparity was initially adverse to blacks, (2) the disparity was initially adverse to whites, and (3) there was deemed to be no disparity. I think it would be more useful to limit the discussion of changes to situations where disadvantaged group are doing worse. But, in any case, I think it would be useful to clarify what is included in these counts.

### ***4. Clarification and amplification***

I would suggest that the report more clearly explain how disparities are being measured, in particular that they are measured in terms of the adverse outcome (or, if such is the case, in terms of the larger disparity). I have recently come upon some articles in the May/June 2007 of *Women's Health Issues*, including one funded by AHRQ, where healthcare disparities are measured in terms of relative differences in favorable outcomes and where many of the statements that authors make about the comparative sizes of different disparities are the opposite of what AHRQ would find. I do not think the authors have any idea AHRQ would do it differently. I note that many illustrations in the NHDR are bar charts of favorable outcomes. A reader relying on the charts to appraise the size of disparities would likely reach different conclusions from AHRQ. In fact, the charts would better visually reflect the proportionate disparities in adverse outcomes if turned upside down.

Also, while the reports provide tables in appendixes with most of the underlying information, the report could be much more informative (with very little additional work) if, for each between-group comparison, a table were provided showing for each core measure each group's old and new rate.

### ***5. Clerical errors unlikely to be repeated***

The following are several clerical errors I noticed. They seem unlikely to be carried over into the 2007 report. But, were I in the position of AHRQ, I would rather know the errors than not know them. Further, since these reports are commonly accessed on line, it would be a good idea to publish an errata sheet. The clerical error in item (a) below

caused me for a time to believe both that the disparity was being measured in terms of relative differences in the favorable outcome and that whites were the disadvantaged group. It also caused me to wonder why a disparity adverse to whites was being highlighted. Unless a correction is made, others may continue to misinterpret this information.

(a) As previously discussed, the rates provided at page 6 for receiving care as soon as wanted are actually the rates for failing to receive care as soon as wanted.

(b) The last core report measure shown on Table 2.1a at 86 is listed as “Children 2-17 with a vision check.” I think the actual measure is for children 3-6.

(c) At page 129 the report states that blacks were 4% less likely to have a specific source of ongoing care. The 4% difference is presumably based on the figures (black 13.7%, white 13.2% in table 202a) for lacking rather than having an ongoing source of care. Thus, blacks are 4% more likely to lack a specific source of care; blacks were only 0.6% less likely to have a specific source of care.

(d) While the top left frame of Figure 2.9 at page 47 of the 2006 report shows the white rate of advice about exercise to be increasing slightly between 2002 and 2003, the top right frame shows the rates to be declining substantially for both non-Hispanic white and Hispanics during that period. Thus, the top left frames, as well as the text about lack of significant change for any group, suggest that the top right frame of that figure is incorrect. Rather, it seems that the bar representing the white rate for 2003 is actually the Hispanic rate for 2002, and the bar representing the Hispanic rate for 2002 is actually the white rate for 2003. I was unable to secure the source information to verify my conclusion. But I suspect that you will find I am correct.

## **B. QUALITY REPORT**

Two issues/errors in the NHQR Report warrant mention:

### ***1. Clarification and amplification***

As with the disparities report, I think the quality report would benefit from a much clearer explanation of how it measures change over time. My brief review of the quality reports left me with the understanding that changes over time are measured in terms of the percent change in the outcome that yields the larger percent change. That is, a change from 20% to 30% in receipt of something is called a 50% change (i.e.,  $(10/20)$ ), rather than a 12.5 % change (i.e.,  $10/80$ ); and a change from 85% to 90% would be called a 33.3% change ( $5/15$ ) rather than a 5.9% change ( $5/85$ ). I do not think many readers of the reports appreciate this.

Also, as with the disparities report, the quality report would be much more informative if a single table were added at the end that showed for each core measure the old and the new rate.

### ***2. Clerical error unlikely to be repeated***

Though I did not read all of any quality report, in noted one clerical error. I mention it even though it is unlikely to be repeated. And it would be useful to correct it.

At page 8, the 2006 quality report states that Figure H.5 show instances of the highest degree of across state variation “as computed by the ratio of the best performing state to the worst performing state.” Since the rates underlying Figure H.5 are negative outcome rates, the figures are actually the ratios of the worst performing state to the best performing state.

Sincerely,  
Jim Scanlan