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LOW-RISK DRINKING LIMITS: ABSOLUTE VERSUS RELATIVE RISK

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The paper by Moos *et al.* [1] raises important questions about the purpose and definition of low-risk drinking guidelines -- questions that extend beyond the elderly population examined in their manuscript to the broader rationale for gender- and/or age-specific drinking limits. Moos *et al.* note that older men experience at least as many problems as older women at comparable levels of consumption and conclude that “guidelines for men should not be set higher than those for women” [1]. This suggests that recommended drinking limits should be keyed towards absolute levels of risk, but I would argue that drinking guidelines should reflect relative levels of risk, i.e., the *excess* risk of adverse outcomes associated with given levels of consumption. Many of the events typically used to assess alcohol-related harm (e.g., violence, job and school problems, and many chronic medical conditions) occur more frequently among men than women irrespective of consumption, and, with the exception of chronic medical problems, these events also tend to occur more often among younger individuals [2-7]. In terms of absolute risk, then, this would suggest that safe drinking limits ought to be lowest for young men, with higher limits for women and the elderly - the very opposite of many existing guidelines. Neither Moos *et al.* nor others have seriously contemplated this recommendation, but the argument that higher absolute levels of alcohol problems among men should result in setting a gender-invariant drinking limit seems to be based on the same questionable premise, just not carried to its logical conclusion.

If, instead, we argue that drinking limits should be lower for those whose risk of alcohol-related harm increases more rapidly with increasing consumption, then we are focusing the drinking guidelines on that portion of risk that is directly attributable to alcohol consumption and not on the portions that reflect social and biological influences. Yes, it is appropriate to compare risk curves for subpopulations in order to assess the need for differential limits, but it is the slope rather than the height of the risk curves that should be compared. In the context of multivariate models that adjust for confounding factors, this amounts to testing for interactions between consumption and gender and/or age. When such an approach has been used, there has been support for lower drinking limits for women and the elderly, i.e., evidence that the positive association of consumption with adverse outcomes is greater among women or increases with age for some types of harm [2,8-12].

Defining low-risk drinking guidelines is a challenging task. Ideally, daily drinking limits should be informed by in-the-event analyses that examine the acute effects of different consumption levels. In practice, daily limits often reflect laboratory data on differential blood alcohol level (BAL) concentrations associated with different “doses” of ethanol, but Moos *et al.* correctly point out that these data ignore systematic gender or age differences in aspects of drinking that may modify BAL response. Weekly limits should reflect prospective cohort studies that capture the incidence of chronic conditions or mortality, but the majority of such studies have failed to distinguish the effects of average daily volume and atypical heavy drinking, to adequately measure the full extent of baseline consumption, and to measure changes in consumption over the follow-up period [13]. In order to avoid contaminating the question of gender- or age-specific limits by differential attribution of harm to drinking, it is desirable that drinking limits utilize data on harm not specifically attributed by the individual to his or her drinking. This is often not the case in cross-sectional studies in which the only harm measures comprise alcohol-attributed items designed to operationalize the criteria for alcohol use disorders. Finally, gender- or age-specific limits need to be assessed by examining continuous rather than dichotomized measures of consumption because, as Moos *et al.* illustrated, the actual amounts consumed within dichotomous categories may vary substantially across subgroups of the population. Even with optimal data, balancing the sensitivity and positive predictive value of alternative low-risk drinking limits is ultimately a question of judgment. Given these many challenges, it is critical that the development of drinking guidelines start with a clearly conceptualized rationale for the purpose of the guidelines that reflects what they can realistically hope to accomplish.

In a final aside, for several years the NIAAA low-risk drinking guidelines [14, <http://rethinkingdrinking.niaaa.nih.gov/>] have recommended that men 65 and older follow the drinking limits for women, thus replicating the guidelines of the American Geriatrics Society.

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