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Insomnia and the risk for suicide: Does sleep medicine have interventions that can make a difference?

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In his 1914 *Lancet* article, "Insomnia and Suicide," C. Ernest Pronger wrote: "For a long time past newspaper reports of suicide, associated with insomnia, have attracted my attention. Probably if all the cases in all the papers were collected we should find that annually a very great wastage of human life from this cause alone goes on which might to a great extent be prevented" [1].

The global rate of suicide is estimated at 14–16 per 100,000 individuals, representing nearly one million deaths per year—greater than homicide and war combined. Suicide in the US is the eleventh leading cause of death; in 2007 more than 34,598 people took their lives, surpassing more publically noted causes of death such as homicide (18,361) or HIV (11,295) [2]. Depending on the age group, suicide attempts exceed deaths by a factor of 20 or more; rates of serious ideation are even higher [3].

In this context, the current issue of *Sleep Medicine* brings once more to the fore the possibility that sleep disturbance contributes to suicidal ideation, an indicator of great distress and, by extension, laying the foundation for more serious outcomes. The extant literature is sparse; published studies suggest an association exists between sleep disturbances (most notably insomnia and/or nightmares) and suicidal ideation, suicide attempts, or suicide. Although cross-sectional studies may identify putative risks (or "risk indicators") [4], temporal evidence needed to establish sleep disturbance as part of a causal chain [5] for suicide exists from only a handful of longitudinal studies [6,8–10]. McCall and colleagues [7] provide the first such assessment of sleep disturbance and suicidal ideation (as opposed to suicide). Their findings, derived from a clinical trial of fluoxetine ± eszopiclone in comorbid major depression and insomnia [11], support observations from cross-sectional studies that insomnia is a predictor of suicidal thinking. Although limited by sample size and lack of generalizability outside a clinical trial, this study was nonetheless undertaken in a high-risk population for suicidality and suicide (well-defined depressed patients) using prospective administration of validated instruments for both insomnia and suicidality (itself a novel accomplishment).

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At best, the above represents a thin body of evidence from which to launch sleep medicine forays into suicide prevention. Sleep disturbance is not included in lists of suicide risk factors produced by the World Health Organization, National Institutes of Health, or CDC. Its presence has been routinely subsumed as a "symptom" (i.e. patients' sleep-related complaints) and a "sign" (i.e. documented by laboratory measured parameters or clinical logs at night during hospitalization) of other more broadly based constructs. Sleep items, much less sleep instruments, are seldom included in epidemiologic datasets that capture suicide variables. It is unlikely, therefore, that convincing amounts of data will soon materialize to firmly establish sleep disturbance as a risk factor for suicide. It is even doubtful that sleep disturbance *per se* could ever emerge as a discrete risk factor, one that is *independently predictive* of suicidal outcomes once removed from factors such as depression, Post-Traumatic Stress Disorder, or continuing heavy consumption of alcohol. Is it premature, then, to include sleep interventions in suicide prevention efforts or is it now imperative to do so?

We now join McCall et al. [7] and others [12,13] to argue that sleep disturbance should be a target for therapeutic research aimed at intervening in the development and treatment of common conditions known to lie on the path to suicide. For preventive interventions, it is tempting to put greatest weight on apparent risk factors that are detected when comparing those who died by suicide versus various control or comparison subjects, but such end-of-life comparisons tell us little about the pathway unto death and less about how to break what became a linked chain for the deceased. Disrupted sleep is the sort of treatment target that can enhance functioning and a sense of personal control while improving profoundly important physiological processes.

The efficacy of sleep medicine interventions for insomnia is well-established [14], with growing support for their use in depressed samples [11,15] as well as growing evidence for the efficacy of nightmare interventions [16–18]. We suggest that a systematic set of studies can be developed that at once teach us more about the central role of sleep disturbances in the evolution of those clinical conditions in which suicide is most common and how to better intervene early in their course. When framed and tested as relatively low cost public health measures for large numbers, studies with sufficient power could measure disease course and lower-frequency adverse outcomes (e.g. suicide attempts). Yet even these will fall short of definitive answers about "suicide prevention," given its relatively low frequency. Nonetheless, such designs would be at least on par with current approaches in the suicide prevention field and likely could yield more definitive findings. Candidate groups might include soldiers returning from our current wars, long-symptomatic veterans who have suffered chronically disordered sleep, people who are unraveling acutely in the face of adverse life events and emerging depressive conditions, and elders (especially men) suffering chronically disrupted sleep associated with nagging medical conditions and persisting under-treated pain. No doubt, one could debate which sleep intervention to initially pursue, what population(s) to target, and how to integrate these interventions with other suicide prevention strategies. Our point is to reinforce the call for action; the challenge really is not about which intervention or what population but that now is the time!

Pronger's [1] simple observation, with its 96-year-old hypothesis remains to be tested. It has been more than a decade since the Surgeon General's *Call to Action* to prevent suicide, and more than two decades since CDC recognized it as a major public health problem. Despite major advances in the pharmacological and psychotherapeutic treatments for major psychiatric disorders during the past half-century, there has been relatively little change in the overall suicide rate in the US, varying from an age-adjusted rate of 11.7 per 100,000 persons in 1979 to 11.4 in 1997 and 11.5 in 2007 [2]. It is long past due to test whether improving sleep serves to save the lives of those who die by their own hand.

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