A New Era in Neonatology Brain Care: We Can Do Better

Neonatology probably has more international networks than any other subspecialty group in pediatrics, networks responsible for conducting large randomized control trials, educating staff, and leading quality improvement studies. The good news is that, thanks to these networks, we are making progress in improving infant mortality and morbidity. The not so good news is that such improvements take more time than they potentially should, resulting in suboptimal outcomes for infants who are deprived of newer therapies with yet untested potential benefit.

From a good news standpoint, infant mortality rates have decreased during this decade as evidenced by articles such as that by Horbar et al in the current issue of Pediatrics. This article shows data on 355,806 infants weighing between 501 and 1500 g at birth, born between 2000 and 2009 in the Vermont-Oxford Network, and indicates that significant progress is being made. On the other hand, 49% of the very low birth weight infants studied by Horbar et al eventually either died or survived with a major neonatal morbidity, placing a huge and costly burden on parents and society who are left to pay for such things as special care and schooling. I think we can do better!

For example, some recent progress has been made in the care of term infants with hypoxic ischemic encephalopathy through the use of moderate brain cooling as a neuroprotective therapy (first reported in 1998). In fact, 9 randomized control trials involving >800 term infants all found a beneficial effect of brain cooling on survival and a reduction in the frequency of adverse neurologic outcomes at 18 months of age; 1 recent study showed this effect lasting as long as 5 years. Unfortunately, there is a paucity of long-term follow-up studies at 8 to 10 years of age, and more of such long-term studies are much needed.

Remember, it takes 2 to 3 years to plan a large trial, 3 to 5 years to enroll patients, 1 year to examine the data, 1 year to write up the trial, and 1 year to publish. Follow-up should be 8 to 10 years, and even US Food and Drug Administration approval could take 3 to 5 years. This means that it will take a long time to prove the effectiveness of any of the emerging, new brain therapies as we look to the future.

We need a new approach. One emerging solution involves “brain care centers” that, once established, can cooperate with each other to organize and conduct large international randomized control trials. Brain cooling centers are now being established for adult cardiac and stroke patients, and we should coordinate our efforts with those being implemented for this older demographic. These centers will require special brain imaging facilities, regional rapid transport systems, and additional specially trained nursing care teams. They can use not just brain cooling but other new modalities just ready for clinical trial testing. For example, there are at least 2 new and promising therapies in neonatal brain care, the use of Xenon gas and erythropoietin along with several new types of artificial surfactant that need testing and validation.

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comparative effectiveness research. These newer therapies are both based on solid, basic science, small- and large-animal studies, and small trials in infants, but they need a much larger, center-based approach to become an evidence-based standard of care.

It seems likely that, in the future, government support for neonatal brain center-based research, in general, will probably be difficult to obtain. Other funding alternatives must be found. For example, universities will need to begin to work with industry as is happening in several leading university medical centers forming consortia with industry to foster multiregional clinical trials in adults. We need to form consortia as well to conduct similar trials in neonates and children.

The formation of international consortia should be able to reduce the time to prove effectiveness of new therapies by at least a few years and, in turn, lead to more infants surviving with less morbidity and healthier outcomes. We need to face this problem and start planning now! We can do better and, through the formation of international consortia and brain cooling centers, we will!

REFERENCES

BENEFITS OF A ROOMMATE: For some of us, living with another person is a pleasure, while for others, it is far from ideal. Whether cohabiting with a sibling, friend, or partner, adjusting to another individual’s unique way of living can be challenging. Recent data, however, suggest that living with someone may be associated with mental health benefits. As reported by CNN (Health: March 23, 2012), researchers in Finland found that living alone was associated with increased use of prescription medications for depression. Approximately 3,500 adults between the ages of 30 and 65 were interviewed regarding their housing, work, social life, and health and then followed for seven years. At the start of the study, approximately 15% of adults lived alone — more than 40% of these because of divorce or death of a spouse. Among the entire group of participants, 17% filled at least one prescription for an antidepressant. However, individuals living alone were 81% more likely to have filled a prescription than those living with someone. Almost one fourth of those living alone filled a prescription for antidepressants, compared to 16% of those living with others. Filling a prescription for an antidepressant may not be an ideal measure of depression, as many individuals may not seek out treatment for psychological issues, and antidepressants can be used to treat a variety of medical conditions, but the findings do highlight an interesting correlation. Of course, it is not clear which comes first: depression or isolation. Individuals with depression may be more likely to seek solitary living arrangements or be unable to find roommates. The actual relationship between depression and living alone is likely to be quite complex and dependent on a variety of factors. Still, while it may be enjoyable and important to have some “alone time,” sharing a domicile might have some significant health benefits.

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