It has been known for decades that opioid withdrawal in neonates has the potential to be fatal. Unfortunately, newborn withdrawal symptoms can be nonspecific, and identifying and differentiating infants with drug withdrawal from those with other illnesses, such as infection or neurologic problems, can be difficult, especially when maternal history is not forthcoming. Loretta Finnegan and colleagues devised the 21-point Finnegan Neonatal Abstinence Scoring Tool (FNAST) in 1975 based on observations of 55 full-term infants with narcotic exposure who were born at the Philadelphia General Hospital. The neonates were all admitted to a nursery and scored every hour for the first 24 hours, then every 2 hours on day 2, and then every 4 hours after that. They were formula fed and treated with a repertoire of agents that are no longer used as first-line treatments, including phenobarbital, paregoric, chlorpromazine, and diazepam. The FNAST is now the most widely used tool to screen, assess, and treat infants suspected of having drug withdrawal, but it is notoriously difficult to administer and is fraught with subjective differences.

In the study by Devlin et al., the authors attempted to shorten and simplify the FNAST by incorporating observational data from several infant cohorts (N = 424), including infants who did not require medications for neonatal abstinence syndrome (NAS). They dichotomized items that were previously expressed in grades of severity and removed items that were not observed frequently or were extremely heterogeneous, including convulsions, high-pitched crying, and hyperactive reflexes. The result was an assessment scale made up of 8 items, from which scores of 4 and 5 yielded closest agreement with FNAST treatment thresholds of 8 and 12, respectively (weight $\kappa = 0.55; 95\% CI, 0.48-0.61$).

The simplicity of this tool is attractive. However, before it can be embraced in clinical care, several questions remain to be answered. First, only 1 score was used to determine treatment. Withdrawal symptoms typically evolve as the infant ages, and whether the associations between the 8 chosen items and NAS remain consistent with time needs to be assessed. The rare or uncommon items, such as seizures, were removed, but this may have limited the ability of the scale to detect severe but rare manifestations of withdrawal that require urgent treatment rather than continued observation. Critical events, such as seizures, may not have been common in the cohort studied by Devlin et al. because the infants, unlike historical examples, were already monitored and treated preemptively with supportive care.

Nevertheless, the most significant knowledge gaps with the use of this and other scales is the lack of information regarding long-term outcomes. No prospective, well-controlled longitudinal studies have been conducted to associate prenatal drug exposure as well as assessment and treatment for NAS with later neurodevelopmental outcomes. Every single drug that causes NAS and every single medication that is used to treat withdrawal is neurotoxic. For example, opioids interfere with neurotransmitter homeostasis, promote cell death by apoptosis, and reduce brain growth and neuronal differentiation. Conversely, without treatment, severe withdrawal could lead to serious complications, such as dehydration, malnutrition, seizures, and even death.

Certainly, the work of Devlin et al. highlights that much more needs to be known about how an infant responds postnatally to intrauterine drug exposure and the optimum screening, diagnostic, and treatment strategies. Perhaps the ultimate goal should not be to decide whether to treat an infant with medication but to prevent poor outcomes, including neurologic harm and death.
Adopting simple measures will only be effective if they are systematically accepted by clinicians, parents, guardians, and caretakers, which is often not the case. For example, standardized protocols for identifying and treating women with opioid use disorder and for assessing and treating infants at risk of NAS have been shown to be beneficial in reducing length of hospitalization and rates of NAS treatment even without changing assessment scales.6

Finally, we need to acknowledge that infants, especially those affected by multiple drugs, may need more than 1 type of assessment. The FNAST was based on infants withdrawing from narcotics, most notably heroin and methadone.2 Today, pregnant women with a drug use disorder usually use multiple drugs, which may obfuscate the clinical presentation of the infant. Incorporating items from other scales, such as the NICU Network Neurobehavioral Scale, which incorporates physiological parameters with interactive capabilities in an assessment method, may provide useful diagnostic information even for infants without opioid exposure and may even prognosticate not only for the short term but also, importantly, for longer-term outcomes.7

REFERENCES