Title: Fifty years and counting – The validity of the original APGAR Score, re-examined for preterm babies (Erhardt et al. BJOG-25-0193), and its relevance for present-day perinatal care.

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"Resuscitation of babies at birth has been the subject of many articles. Seldom have there been such imaginative ideas, such enthusiasm, and dislikes […] and study about one clinical picture .." wrote Dr Virginia Apgar, introducing a five-parameter, three-point scoring system of the newly born, inseparably associated with her name {REF 1: Apgar V. Curr Res Anaesth Anal 1953;32:260-7}. Virtually every newborn in high- and medium-income countries is assigned an APGAR score, as developed over half a century ago. However, owing to the many changes in perinatal medicine and especially management of mother and newborn in the delivery room there is ongoing debate about

the validity of the APGAR score. Although undoubtedly imperfect, most obstetricians and neonatologists would agree that it is still a “little premature to pension the Apgar off yet” {REF 2: Marlow N. Arch Dis Child F&N Ed 1992;67:765-9}.

In this edition of the BJOG, Ehrhardt et al., using data from 7,900 very preterm babies, obtained from 19 regions in 11 European countries, provide further evidence that low five-minute APGAR scores are associated with unfavorable perinatal outcomes, and also highlight variations in the practice of APGAR scoring between countries {REF 3: BJOG-25-0193}. We would like to highlight some aspects that could be of special relevance for clinicians.

Firstly, authors provide evidence that the APGAR Score is widely used in very preterm babies. This resonates with Apar’s findings, who investigated 2,964 preterm babies and found significant differences in survival between babies whose score was poor (0-3), fair (4-6), and good (7-10) {REF 4: Apgar V et a. AJDisChild 1962;104:419-428}. Studies exploring the APGAR score’s validity in preterm babies have yielded conflicting results. However, the largest international prospective study, Test Apgar trial (20 regions, 12 countries) including almost 2,000 very low birthweight babies {REF 5: Rüdiger M et al. BMC Pediatr. 2015;15:18} supports the data from Erhardt et al., showing low APGAR scores correlated strongly with mortality and short-term outcomes.

Further, Ehrhardt et al. describe regional variations in scoring babies. Virginia Apgar had originally suggested the score to be assigned by a person not involved in the delivery. Nonetheless, APGAR scores tend to be higher when given by obstetricians or midwives, compared to neonatal staff. Ethnicity influences APGAR scores, with dark skinned babies receiving lower scores. Inter-centre variations and intra-/ inter-observer variations are also well recognized. Reason for variations in scoring include a lack of consensus on how to score babies receiving active intervention, and how to score premature babies. Whereas Apgar’s score was deemed suitable for all babies, some elements such as reflex, irritability or muscle tone, are maturity dependent. Hence, the normally transitioning premature baby may receive low scores because of its immaturity.

From an obstetric perspective, APGAR scores can be used as a quality indicator of perinatal management. However, although a low APGAR score at five minute confers a risk of cerebral palsy, evidence has shown most babies with low APGAR scores will not have neurological sequalae. Thus, reliance on APGAR trends alone remains limited for guiding improvements in perinatal care {REF 6: Ehrenstein V. Clin Epidemiology 2009;1:45-53}.

Despite of its limitations, the APGAR score remains a useful didactic tool. The five items are representative for the progress of postnatal adaptation. Accordingly, recent data clearly showed that heart rate, reflexes and breathing at one minute predict the subsequent need for resuscitation {REF 7: Mense L et al. BMC Pediatr. 2025;25:214}. Therefore, even if not mandated by resuscitation guidelines, the APGAR Score should be assigned to every newborn. In future, using a specified APGAR

{REF. 5}, and by expanding the score to include administered interventions, may decrease inter-observer variations and increase its predictive prowess.