Introduction
Cerebral Palsy (CP) is a life-long condition that has its origins in pregnancy or shortly after birth. CP affects people in different ways, but ultimately affects the way the person can move, including control and coordination of the muscles and their reflexes, posture and balance (1). CP is also associated with a range of other neurodevelopmental deficits, including visual, learning, hearing and speech impairments (2).

Long Term Outcomes for Children with CP
As previously noted, CP affects different people in different ways. CP is often categorised based on gross motor skills, manual ability and functional communication. Gross motor skill impairment can range from the ability of a child (6+ years) to perform activities such as running and jumping, with slight decreases in spend, balance and/or co-ordination (Level 1 impairment) to impairments that completely prevent voluntary control of movements and an inability to sit, stand or walk, even with the aid of adaptive equipment (level 5 impairment) (3). Manual ability refers to the ability of a child with CP to handle objects in everyday activities and ranges from “handles objects easily and successfully” to “does not handle objects and has severely limited ability to perform even simple actions” (4). The ability to effectively communicate is a major determinant of quality of life. Individuals with CP may be able to effectively communicate (no impairment), however, some individuals may have slower communication, which can make communication interactions more difficult and sometimes frustrating for the patient. At the other end of the scale, individuals with CP have limited comprehension of communication interactions and communication is seldom effective, even with individuals with whom the patient is familiar, including family and carers (5).

Measuring Outcome
Motor development at 3 months postnatal age is used as an indicator of future motor development in babies with and without pre- and perinatal complications as this age is a time of major transition in neural function (6-8). ‘Normal’ development at this age is well defined, and includes specific or proper control of the head, the use of elbows in the prone position, body balance in the supine position and many other assessments (9). Qualitative assessment at this age is a good predictor of delayed or impaired motor development in children: general movement disorders at this age are a reasonable predictor of future CP. Children with CP often show delays in many of the qualitative features assessed at 3 months age, and many do not meet these milestones by 9 months age (9).
Independent walking is a major milestone that parents of children with CP aim to reach, and often children will undergo intensive physical therapy with this aim in mind. The ability to walk independently has physiological and functional benefits for these children, but there is also a psychological component, the symbolical significance of the act, which drives rehabilitation measures and perceptions of successful outcomes for both children and their parents or carers (10). Obviously, inability to perform tasks of daily living and to effectively communicate can be frustrating for both patients and those around them. Whilst interventions for movement deficits, such as surgical procedures, splints, medication and physiotherapy are needed, it is also important to focus on the other aspects of CP including communication issues and intellectual disability. In order to reduce the impacts of these components of CP on the body and the individual's quality of life speech pathology and special education and learning strategies may help to facilitate a child’s engagement in school and with their peers.

**What are we really aiming for?**

New philosophical approaches to the rehabilitation of children with CP focus less on the importance of independent walking and more emphasis on enabling mobility, social inclusion and integration within the community (11). As outlined above in “Long term Outcomes”, mobility is not the only important factor in quality of life. In fact, the availability of motorised wheelchairs should decrease our emphasis on walking as a milestone and a measure of “successful outcome” in CP. Understanding which situations a child is able to independently manage and the extent to which they need support or adaptations is a crucial determinant of quality of life: the ability, with or without assistance to perform tasks of daily living may be a large determinant of quality of life in individuals with CP.

**Conclusions**

Assessment of neurodevelopment using a range of milestones allows physicians, families and patients, to understand the level of impairment associated with CP. However, the attainment of certain milestones, such as independent walking, may need to be reviewed in certain cases where this may not be possible, as continued efforts may have unfavourable effects on the patient. Instead, setting attainable, primary goals which contribute to independence and assist with socialisation with peers and the community may have a greater positive effect on quality of life.
References: