Developing a TOM scale

Stephanie van Eeden *describes the development of the therapy outcome measure scale for velopharyngeal disorder*

In 2016, the cleft speech and language therapy team in Newcastle devised a therapy outcome measure (TOM) scale for velopharyngeal disorder: the TOM-VPD. Using the principles devised by the authors of the TOM, our department has used this measure consistently since 2017.

A typical TOM has five domains: impairment, activity, participation, wellbeing, and carer wellbeing. Each domain has a rating scale from zero to five, and is completed by the therapist. The scores can be compared over time, both pre- and post-therapy interventions or at selected assessment points, to show change associated with intervention.

However, using the TOM as a measure of impact of speech and language therapy intervention in cleft proved difficult in the past. The TOM for cleft lip and palate (CLP) was developed for use with adults in the developing world where late repair of CLP is common; the impairment domain describes the severity of the cleft rather than the speech characteristics. Additionally, there is a TOM for phonological disorder, which has many useful aspects for children with VPD in the domains of activity, participation and wellbeing. However, impairment for VPD is difficult to measure on one scale due to the dual nature of the disorder: 1) resonance/nasal airflow difficulties; 2) articulation errors (often described as active cleft speech characteristics – CSCs). Therefore, the TOM-VPD was developed to include these two impairment domains.

To date, the TOM-VPD has been used within specialist cleft centres at key

TABLE 1 Median averages (interquartile range) using the TOM-VPD for three-year assessment point

Birth cohort	Impairment 1: VP function	Impairment 2: Articulation	Activity	Participation	Wellbeing
Proposed median standard	4.8	3.3	3.0	4.2	4.5
2014	5.0 (4.5 – 5.0)	3.0 (2.0 – 4.5)	2.0 (1.3 – 4.0)	4.0 (2.0 – 5.0)	5.0 (4.0 – 5.0)
2015	4.5 (4.0 – 5.0)	3.0 (2.0 – 5.0)	3.0 (2.0 – 4.0)	4.0 (3.0 – 5.0)	4.0 (4.0 – 5.0)
2016	5.0 (4.0 – 5.0)	4.0 (2.0 – 4.0)	4.0 (2.0 – 5.0)	4.5 (4.0 – 5.0)	4.5 (4.0 – 5.0)

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assessment points starting from three years old, and to track the impact of speech and language therapy intervention and liaison with the multidisciplinary cleft team and SLTs in the community over the whole care pathway for these children.

Reliability study

Five specialist cleft SLTs from one CLP service in the UK watched a video of 10 five-year-old children with CLP. The SLTs listened to a case history summary for each child, which included comments from clinic reports and parental reports with regard to functioning at school and home, rating the two impairment domains, activity, participation and wellbeing. This process was repeated one month later.

All scores for each domain were collated and analysed. As per guidance from the authors of the original TOM, an agreement included any scores which fell within a half mark of each other, and a disagreement any scores one mark or more apart. Intraclass correlation coefficients (ICC) were calculated for both inter-rater and intra-rater reliability. The new adapted TOM-VPD was highly reliable. The inter-rater reliability ICC ranged from 0.74 (velopharyngeal function) to 0.96 (articulation). The mean of the intra-rater reliability ICC ranged from 0.81 (velopharyngeal function) to 0.93 (articulation). Guidelines suggest that ICC values greater than 0.90 indicate excellent reliability, values between 0.75 and 0.9 signify good reliability, and values between 0.5 and 0.75 show moderate reliability.

First outcomes

The TOM-VPD has been used in our department at the three-year assessment point for children born in the years 2014, 2015 and 2016, and for children at the five-year assessment point born in 2014. Our three years of data has enabled us to set some standards to benchmark our outcomes year-on-year and to look at the potential for measuring longitudinal change.

The median average TOM-VPD scores and the interquartile range for the first three birth cohorts are reported in Table 1. Standards were proposed using the mean of the median scores across the three years, and all standards were met for the 2016 birth cohort. Figure 1 shows TOM-VPD scores at three years and five years for the 2014 birth cohort. The improvements over time with regard to speech (impairment domains) are also reflected in the activity and participation domains. An improvement in articulation between three and five years can be seen, as can subsequent improvements in activity and participation. This reflects and supports the need for speech intervention in the early years.

Conclusion

To date the TOM-VPD has been piloted with children with CLP at ages three and five years. We intend to use the TOM-VPD at assessment points along the care pathway to measure outcomes longitudinally. With long-term use into middle and later childhood, we would anticipate that further observations should reflect interdisciplinary working between the SLT and other members of the team, such as surgeons and psychologists. During 2020, when it was not always possible to carry out the rigorous speech assessment usually required in the field of CLP, the TOM-VPD has been invaluable to continue to measure our outcomes. We hope that it also goes someway to fill the gap of a much-needed tool to measure the impact of speech on quality of life.

Following this study, it would be beneficial to test the TOM-VPD for content and construct validity, comparing the scores to management of the cases. It would also be of interest to trial it with other populations such as children and adults presenting with non-cleft velopharyngeal incompetence (VPI), and in this regard it may prove useful to SLTs working in the community as well as specialist cleft centres. In the long-term, consistent reporting using the RCSLT Online Outcome Tool (ROOT) would be desirable. B

REFERENCES
To see a full list of references, visit **bit.ly/Bulletin References**

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FIGURE 1 Average (median) TOM-VPD scores for the 2014 birth cohort at three and five years old