ResMed

Astral™

Case study: Baby K

Condition: Bronchopulmonary dysplasia

"Astral gave us more information and seemed to work better in the small child, an area that no ventilation device has done particularly well" — Dr Bossley

Baby K was born at 28 weeks gestation at the King's College Hospital in London. His prematurity meant he had bronchopulmonary dysplasia and needed to be ventilated from the outset, resulting in an extended stay in the neonatal ICU.

After six months it was time to transfer baby K to the paediatric ICU. Progress had been made but it was slow. Baby K had severe reflux that was thought to be hampering his weight gain and he still required ventilation, which had been complicated by his rapid respiratory rate and recurrent infections.

According to baby K's consultant paediatric respiratory physician, Dr Cara Bossley, his respiratory effort was a major challenge.

"He was very tachypnoeic and taking very shallow breaths at a very rapid rate." This was thought to be a major contributor to his poor growth rate and was perhaps being caused by the reflux pneumonitis.

As a first step, baby K underwent surgical correction of his gastro-oesophageal reflux disease. The decision was then made to establish baby K on the home ventilator Astral, while at the same time trying to gain control over his continued tachypnoea.

From day one, the detailed data captured by the Astral ventilator proved invaluable in assessing baby K's challenging respiratory condition. "He was breathing at a rate of knots," Dr Bossley said, "but we were able to get information about his actual lung volumes and how well he was triggering from the Astral device."

It had been thought that baby K's rapid breathing was due, at least in part, to him auto-triggering the ventilator.

However data analysis from Astral showed that baby K was indeed spontaneously breathing at a rate of over 90 bpm. The new ventilator's ability to synchronise with respiratory rates up to 100 bpm represented a major advance in this particular case over the previous ventilator, which was only sensitive up to a rate of 80 bpm.

Once it was established that baby K's tachypnoea was spontaneous, the clinicians were able to fine-tune the settings on the Astral device. By appropriately adjusting trigger sensitivity, EPAP and IPAP, the patient's work of breathing was reduced, which allowed his respiratory rate to decrease.

Over the next few months in the paediatric ICU, baby K gained a much stronger grip on life. He gained weight and his respiratory rate fell to 40 bpm. More importantly he was considered to be well enough to be weaned off his ventilator and now receives only CPAP through a tracheotomy.

At 12 months of age baby K was discharged from the paediatric ICU weighing 6.8 kg, with a prognosis that included the possibility of not requiring any assistance with his breathing in the future.

Ventilation patients rarely come more challenging than baby K. According to Dr Bossley "Astral gave us more information and seemed to work better in the smaller child, which is an area that no ventilation device has done particularly well."

It is a testimony to both the medical expertise and the advanced technology that baby K now has a future away from hospital at home with his family.

MANUFACTURER
ResMed Ltd
1 Elizabeth Macarthur Drive
Bella Vista NSW 2153 Australia

DISTRIBUTED BY
EC REP ResMed (UK) Ltd 96 Jubilee Avenue
Milton Park Abingdon Oxfordshire OX14 4RW UK

See ResMed.com for ResMed locations worldwide. Astral is a trademark of ResMed Paris SAS and is registered in the U.S. Patent and Trademark Office. Specifications may change without notice. Product availability may vary across regions.
© 2014 ResMed Ltd. 1018105/2 2014-09