

Impact and outcomes of care following Charitable Funds investment in Neonatal Ventilators.

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- Late in 2023, it was acknowledged that the Health Board was unable to adhere to national British Association of Perinatal Medicine (BAPM) Standards. Furthermore, the service was unable to meet some of the outcome measures of the national improvement projects such as Perinatal Excellence to Reduce Injury in Premature Birth (Wales) (PERIPrem Cymru).
- The ventilators in place at that time (SLE 5000) could not deliver the respiratory support required. Additionally, they were out of support/ maintenance contracts with no means to repair, replace or service them. This meant that the provision of the most up to date care was unavailable and quality was comp



Risk to neonates pre investment



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- The ventilators were not capable of providing Volume Guarantee (VG) ventilation. Also known as volume targeted ventilation, VG is the ability to deliver specific and accurate ventilatory pressures when supporting the neonate.
- VG is known to be protective to the lungs of premature infants and lead to reduced rates of chronic lung disease, including the use of home oxygen.
- The use of volume targeted ventilation is an integral part of the PERIPrem project - ensuring good perinatal optimisation of preterm infants, leading to improvements in survival and neurodisability.



- The risk to babies was also subject to feedback from the Cymru inter-Hospital Acute Neonatal Transfer Team (CHANTS). Prior to the arrival of the transfer team, the most up to date advice was issued to include VG – which the Health Board (HB)was unable to initiate as VG was unavailable. Upon arrival, this risk was mitigated due to utilisation of CHANTS equipment.
- Anecdotal feedback at that time indicates conditions improved prior to arrival in tertiary care due to this level of intervention.
- Specialist Care Baby Unit (SCBU) historically utilised three different machines, to provide three different modes of ventilation, a more complex series of interventions in comparison.

Charitable Funds Investment



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- Investment of the new “SLE6000” ventilator has resulted in the provision of safer, higher quality care across the health board.
- The Charitable Funds Committee approved a £121k investment in November 2023. The new machines were in place and staff fully trained from April 2024.
- CHANTS feedback is entirely positive – optimal care is delivered earlier and transfers are less complicated in this regard.
- The ventilator is capable of providing all 3 ventilatory requirements- making care at the cot side much less complex- and has resulted in a reduction in consumables purchased – improving cost efficiencies.
- The neonatal team is now able to provide Nasal continuous positive airway pressure (NCPAP) via the new machines. This has resulted in reduced clinical risk by providing a consistent pressure that self-regulates the flow to maintaining the pressure needed. This has been seen to reduce the need for invasive ventilation, clearly beneficial to neonatal outcomes.

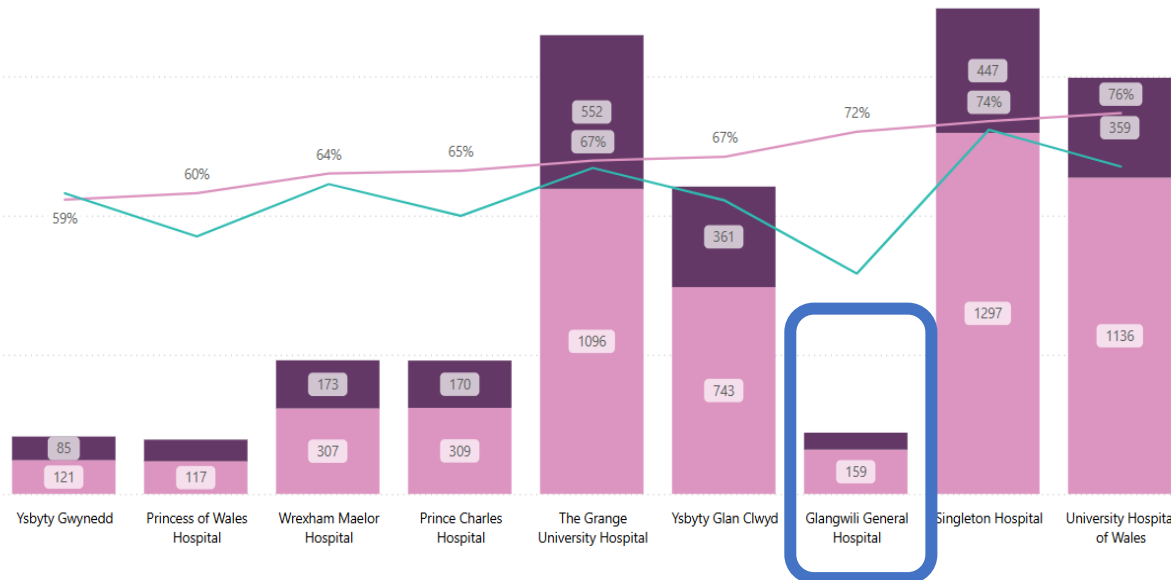




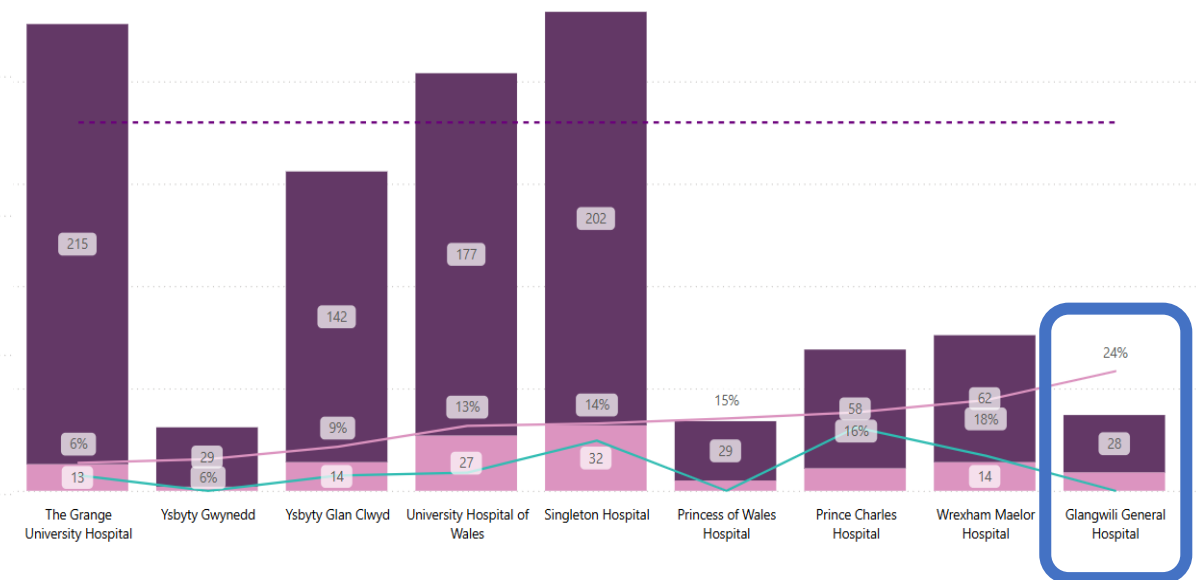
- Risk to neurodisability/ long term respiratory conditions has reduced.
- PERIPrem Cymru and BAPM standards are now being met.
- This in turn has a profoundly positive impact on the mental wellbeing of parents, carers and families. This is particularly pertinent for families that can now be kept closer to home, minimising separation from support networks and siblings/children.
- Efficiencies seen in relation to training, as only one machine staff need to be trained and deemed competent to use rather than 3.
- Risk of user error reduced, and ease of use / user confidence is promoted.
- Clear long term health economy benefits realised for those babies requiring such critical care interventions.

- Since the investment, Hywel Dda is ranked 3rd in Wales for optimisation of preterm infants.
- Also number one in Wales for the most babies fully optimized each month (of which ventilatory considerations are an essential criteria)

PERIPrem Cymru Prospective Data, Optimisation Score, All Months



PERIPrem Cymru Prospective Data, Optimisation: received ALL interventions, All Months





It has proved exceptionally difficult to obtain a patient story or feedback from parents in relation to the impact this new equipment has had.

This is believed to be due to their experience when navigating a significant trauma in their lives where their premature baby is so critically ill- and often where the mother is also receiving treatments, sometimes separated from her child.

To address this, Neonatal Services will link in with the Patient Experience Midwife to improve feedback

Feedback has been obtained from the clinical team that have used the new machine:

Staff Feedback



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Easier to use and set up.
Alarms are clear and easy
to read and fix
Neonatal Staff Nurse

The pressures are
maintained easier than
on the older cpap
machines
Neonatal Staff Nurse

The graphs are amazing,
interchangeable ventilation
strategies are great, CO2
option is ideal and volume
control is precise
Paediatric Consultant

I'm so pleased that our Hywel Dda
babies are now receiving gold-
standard respiratory care and
being given the best chance in the
short term and long-term. This is
in keeping with the aims of
PERIPREM Cymru - giving all
premature babies the best chance
at the start of life.

Paediatric Consultant

Sle6000 ventilators give us the ability to
provide more accurate delivery of volume
targeted ventilation compared to our old
ventilators making a safer delivery of
ventilation to our babies especially
premature reducing risk of lung injury
meeting the periprem requirement
supporting better outcomes in life for our
babies and families .

Neonatal Sister

The ventilators have recently been utilised
for ncpap and high flow, Ncpap is
particularly effective in my opinion as the
flow rate is adjusted automatically to
achieve a set PEEP, resulting in more
consistent pressures which our older
equipment was incapable of. In regard to
high flow, the SLE6000 circuits are
considerably cheaper than the optiflow
circuits resulting in cost savings.
Additionally, having one circuit that does
ventilation, nCpap and high flow makes it
easier to train staff on one piece of
equipment as opposed to three separate
machines and again contributes to cost
saving.

Neonatal Charge Nurse

Conclusion



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- The investment of £121k to support the procurement of the 4 ventilators has significantly improved neonatal care delivery.
- Quality and safety (Q&S) is of paramount importance in the Neonatal environment, and the Q&S improvement in terms of BAPM compliance and PERIPrem progression along with Patient Reported Outcome Measures (PROMS) and Patient Reported Experience Measures (PREMS) is reassuring.
- The outcomes and experience for the babies (and families) right at the very start of their life has improved immeasurably as a result of the investment.



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