



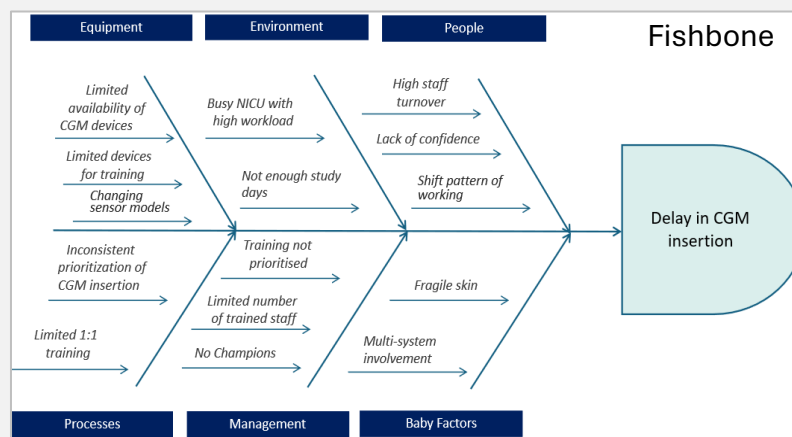
PROBLEM

Limited staff trained in continuous glucose monitor (CGM) insertion in preterm neonates results in delays in starting insulin CGM protocol. This leads to more heel prick & unnecessary pain and distress for these vulnerable infants.

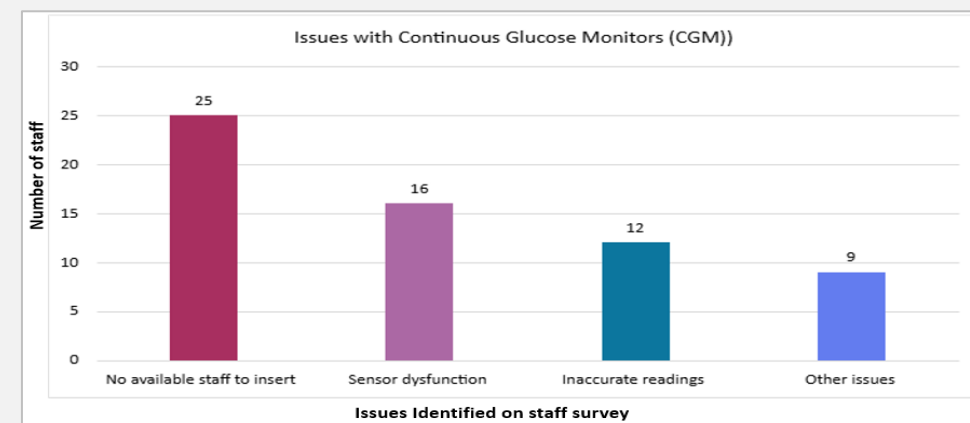
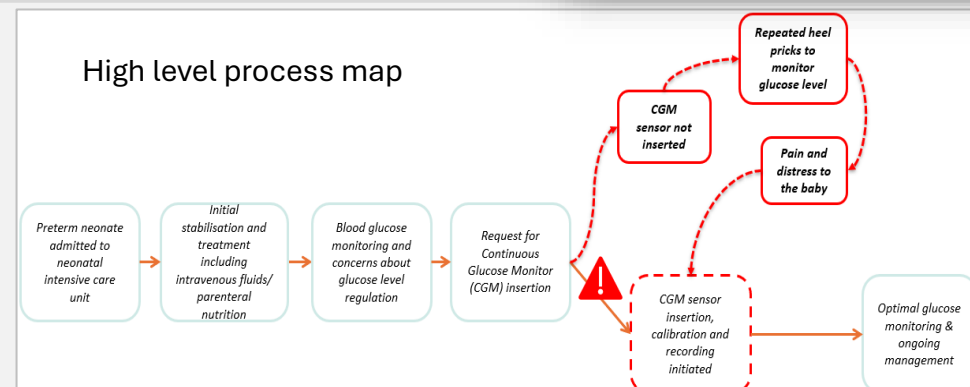
BACKGROUND

- Percentage of preterm liver births in UK is increasing, reaching 7.9% of live births in 2022
- Hypoglycaemia and hyperglycaemia is common in neonates requiring intensive care, particularly in extremely preterm neonates and are associated with increased mortality and morbidity
- In our NICU we have been using CGM regularly for babies <1200g who are at risk from metabolic instability, dysglycaemia, neonates on insulin treatment and at risk of hypoglycaemia requiring continued BG monitoring
- Delaying CGM insertion leads to more heel pricks and pain and distress for preterm neonates who are at risk of dysglycaemia and need continuous glucose monitoring.

DIAGNOSTICS



High level process map



AIM & MEASUREMENT DEFINITION

Aim: Improve the rate of continuous glucose monitor (CGM) insertion in preterm neonates, where indicated to within the shift from 5 out of 10 babies to 8 out of 10 by the end of February 2026

Chosen measure: Delay in CGM insertion

0= Delay
1= No Delay

Inclusion criteria:

Preterm neonates requiring CGM

Exclusion criteria:

Neonates >32 weeks gestational age
No available monitor
Fragile skin

Sampling method and frequency:

Collect data fortnightly to look for delay in CGM insertions

CHANGE IDEAS

Staff training:

- Mandatory study days/ monthly nursing teaching days
- Teaching sessions for doctors
- Ad-hoc training nurses and doctors
- Continuous glucose monitor (CGM) insertion training log

One-page laminated guide:

- Steps/ images for CGM insertion
- Troubleshooting guide

CGM champions: Nurses, Trainee Doctors

Equipment check:

- Daily huddle checks

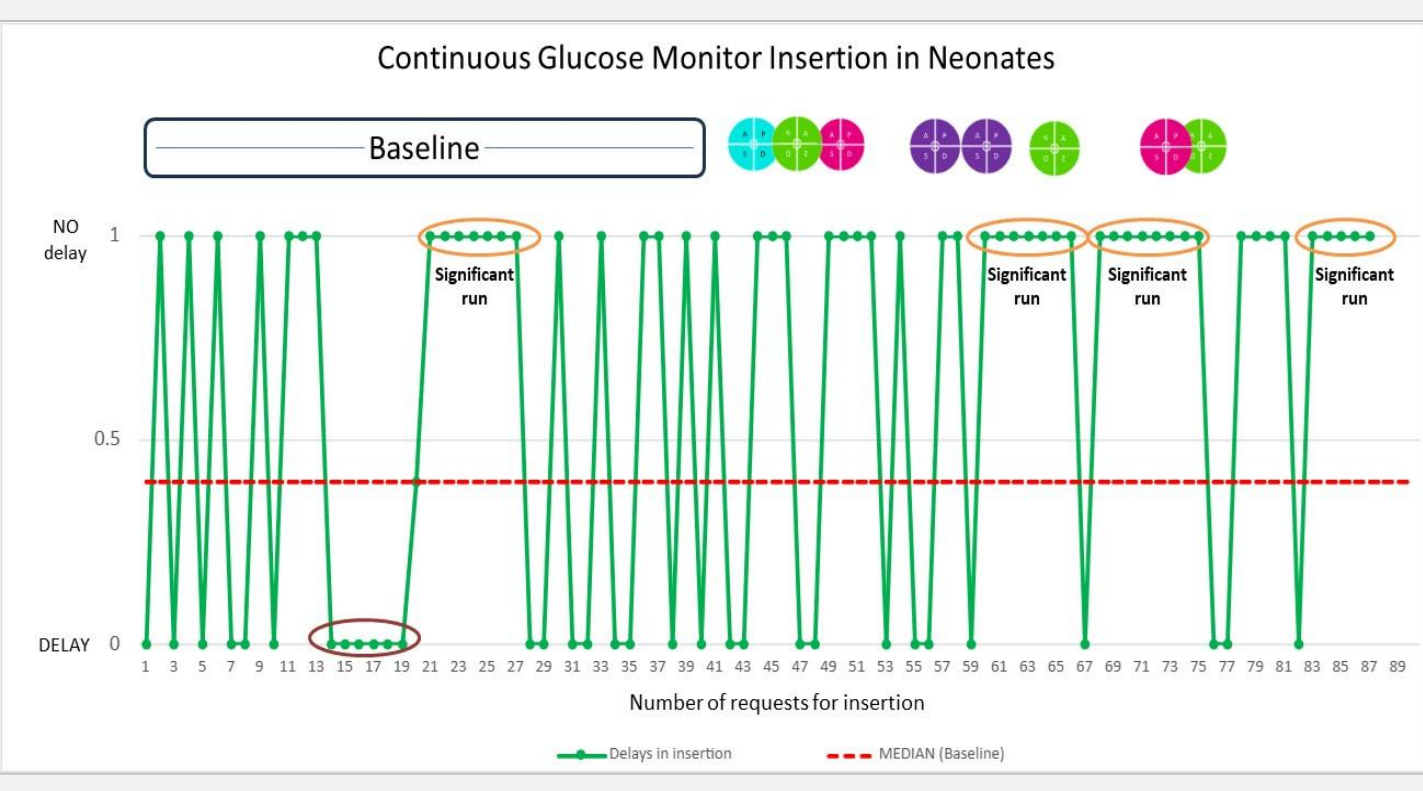


PDSA Test	PLAN	Do	STUDY	ACT
1.1	Training log – Establishing a log for trained and interested staff	Along with nursing staff lead, I created a training log for nurses and doctors	The nursing lead was very keen, we identified staff already trained and where the deficit was in training.	Email and encourage staff about training and develop training programme
1.2	Continue to maintain the training log	Email sent to the team about CGM training	The number of staff trained increased on the training log; Interested staff members/ resident doctors approached us for training.	Adopt: Plan ad-hoc training sessions to suit staff availability
2.1	Incorporate into the nursing training mandatory study day	Theory session on CGM insertion and trouble-shooting done on mandatory study days	Issues: Nurses fed back about lack of practical training and that it needs to be more frequent than 3 months. It helped identify staff who were interested in further training.	Adapt – Plan ad-hoc training for interested nurses and training of nurse practice educators
2.2	Nursing training – ad-hoc/ monthly study day	The lead CGM nurse trained nurse practice educators and continued ad-hoc nurse training	3 nurse educators trained During these sessions more interested nurses were identified, positive feedback obtained from nurses	Adopt – Refresher for trained nurses and extend practical training to interested nurses and doctors
3.	Incorporate training to Tier 1 and Tier 2 Doctors	We provided training at teaching sessions for doctors – 2 sessions	10 doctors were trained with most giving positive feedback. Since doctors changeover frequently, reflected the need to ensure that those that stay longer are trained	Adapt – Interested doctors staying longer identified for ad-hoc training

PDSA cycles

PDSA Test	PLAN	Do	STUDY	ACT
4.1	To identify CGM champions to be available for insertion	Identified senior nurses and doctors as CGM champions and informed the team via email	Increased number of CGM insertion on the unit and CGM champions inserted CGM in babies looked after by other staff when busy. Some nurses and doctors not on the list requested training and showed interest	Extended: Discussion during huddle to identify trained staff and the babies who need CGM on every shift
4.2	To include CGM equipment check and insertion requirement in morning huddle	Daily checks regarding equipment availability and need for CGM insertion done by nurse in charge	Helped identify number of CGMs currently in use and available. Early identification of babies needing CGM in morning, helped CGM champions to support insertion	Adopted to daily morning checks during the huddle
5.0	Laminated guide for insertion and trouble-shooting steps	To develop a single page laminated guide instead of a current 3-page guide	Obtained feedback from staff that laminated guide won't be helpful as not using the current guide. All trained staff have insertion and trouble-shooting video in emails which they found helpful.	Adapt to develop a QR code with training videos to make it easily accessible to trained staff. Sustain – Nominate nurse lead and Neonatal consultant to oversee ongoing improvement.

RUN CHART



CONCLUSION & LEARNING

- Almost achieved my aim with increase in Continuous Glucose Monitor (CGM) insertion rate from 5 out of 10 to 7 out of 10
- The run-chart showed 3 'runs' of 5 or more points above baseline median indicating statistically significant improvement with implementation of change. Two 'opposing' runs occurred during baseline data collection which may reflect raised vigilance after a period of poor performance.
- Reduced reliance on repeated heel-prick blood glucose testing, improving patient comfort and parents experience in NICU by reducing procedural pain
- Improved clinical decision-making through better glucose trend monitoring
- Education sessions for junior doctors and nursing staff, which helped improve staff awareness and training in CGM insertion
- Adding CGM checks during morning huddle, nominating permanent staff members as champions and continuing regular small PDSA cycles helped sustain ongoing improvement

REFLECTIONS

- Structured process of exploring problems using diagnostics helped getting the aim and measurement definition right
- Through multiple PDSA cycles interventions were adapted and modified based on real-time feedback
- Ongoing PDSA cycles, supported by periodic sampling, to monitor compliance and confirm sustainability of improvement
- Important to involve team members including lead neonatal nurse for CGM and get their suggestions and help
- For sustaining improvement will be important to have permanent staff members as champions

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