

Illuminating Inpatient Diabetes Care

Miranda Walker, Clinical Nurse Specialist/Diabetes
Dr Brian Corley, Diabetes & Endocrine Registrar. PhD.

Quality Improvement Scientific Symposium 2019



Acknowledgements

- Miranda Walker, Clinical Nurse Specialist -Diabetes
- 3DHB Inpatient Diabetes Improvement Project Team
- Lindsay McTavish, Clinical Nurse Specialist -Diabetes
- Lyn Macpherson, CNM Diabetes, HVDHB
- Jenny Percival, Nurse Educator, and Paula Nilson, Diabetes Nurse Specialist, WrDHB
- Dr Manson Ku, Anaesthetic Registrar (now ADHB)





Illustration by Bridget Lydon

2016 CCDHB Hypoglycaemia Audit – 1 Ward

- 400 potentially preventable hypoglycaemic events per month, hospital wide
- Hypo event duration range 10 – 229 minutes
- 45% recurrence of hypo events



Contributing Factors

- Unclear documentation of blood glucose and insulin administration
- Outdated or unclear guidance documents
- Information on treatment of hypoglycaemia not readily accessible
- Clinical inertia when blood glucose levels are falling
- Prescribing errors e.g.

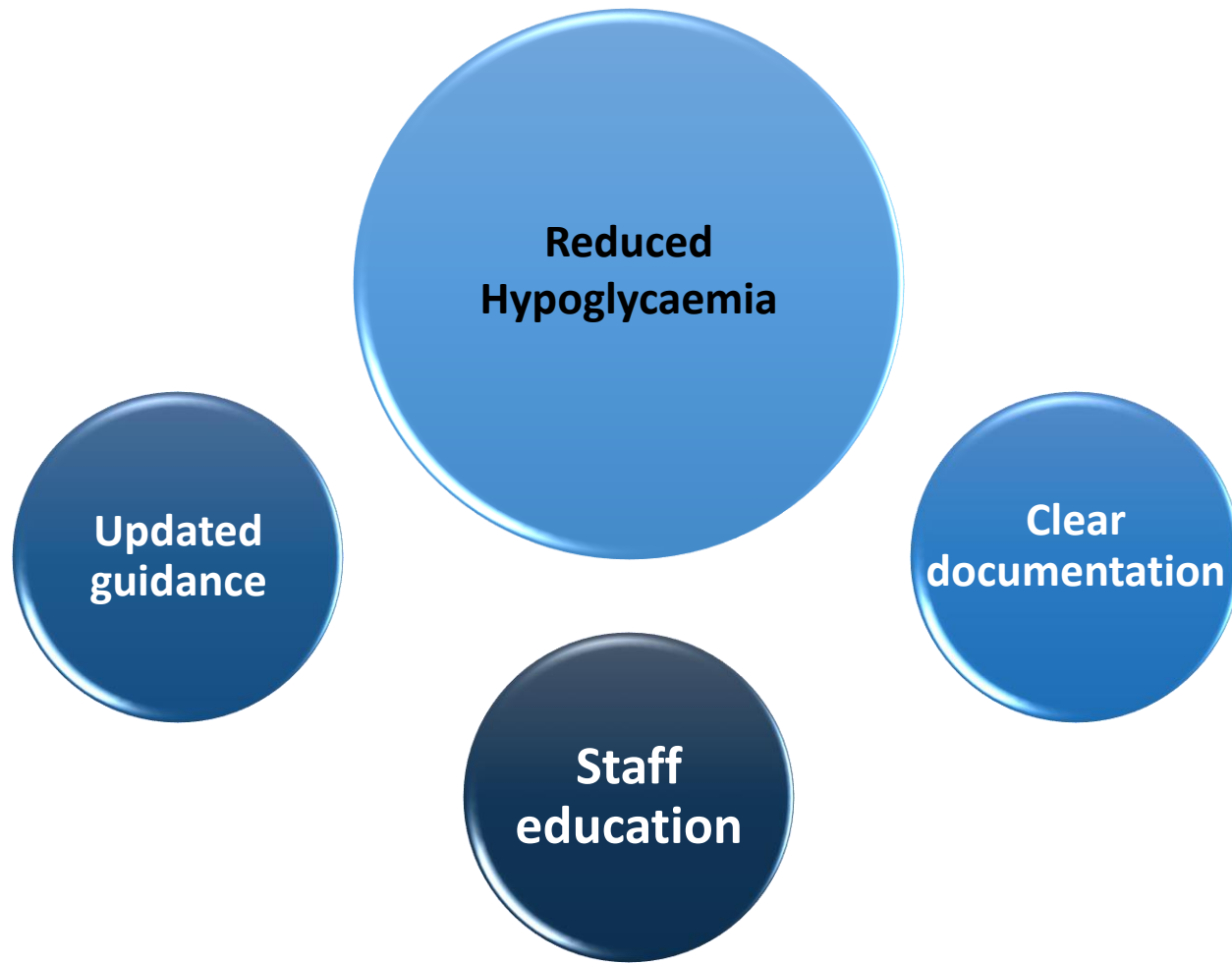
100 Insulin

VS

10 Units Insulin

Aims of the Intervention

- **Improve patient outcomes**
 - Faster recovery, shorter hospital stay
- **Safer use of insulin**
 - Fewer medication errors
- **Reduce harm**
 - Fewer adverse events, earlier recognition and treatment
- **Reduce cost**
 - Reduced length of stay



Updated guidance

- Six updated policies
- Target glucose changed to 6 – 10 mmol/L
- Subcutaneous basal insulin continues while fasting
- IV insulin only if prolonged fasting
- Severe or recurrent hypoglycaemia is a Reportable Event

Clearer documentation

Four new insulin charts

Insulin prescription, administration, monitoring and guidance all in one chart

Additional insulin prescriptions pre-defined

‘Units’ pre-printed

EWS-style monitoring for earlier intervention

DAILY PLAN

Diabetes treatment should be reviewed daily

BGL monitoring frequency (tick all that apply):

Modified BG Target Range: _____ Sign: _____

Standard (see guideline) 3 hrs post-meal 3 hrs post-correctional insulin dose 00:00 + 04:00 Twice daily only

Breakfast time: 0630

Lunch time: 1200

Dinner time: _____

Time <i>minutes</i>		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Blood Glucose (mmol/L)	> 15																								
	10.1 - 15																								
	6 - 10							8.0																	
	4 - 5.9													4.5											
	< 4																								
Insulin (units) Administration	Time given →→	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	1) Insulin Name							4						?											
	2) Insulin Name																								
	3) Insulin Name																								
	4) Insulin Name																								
RN Initials	Giv/Chck	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	

4 - 5.9
↑ risk of
HYPOglycaemia

Screen for symptoms/signs of hypoglycaemia:

⚠️ sweating, trembling, weakness, pallor, palpitations, sudden hunger, headache, dizziness, confusion, blurred vision, changes in level of consciousness

If **SYMPTOMATIC**, give small carbohydrate snack and monitor BGL every 1 hour until BGL greater than 6 mmol/L

If **ASYMPTOMATIC**, monitor BGL every 1 hour for 2 hours, then 4 hourly if BGL remains stable

Consider **withholding** all short or rapid-acting insulin until BGL is greater than 6 mmol/L

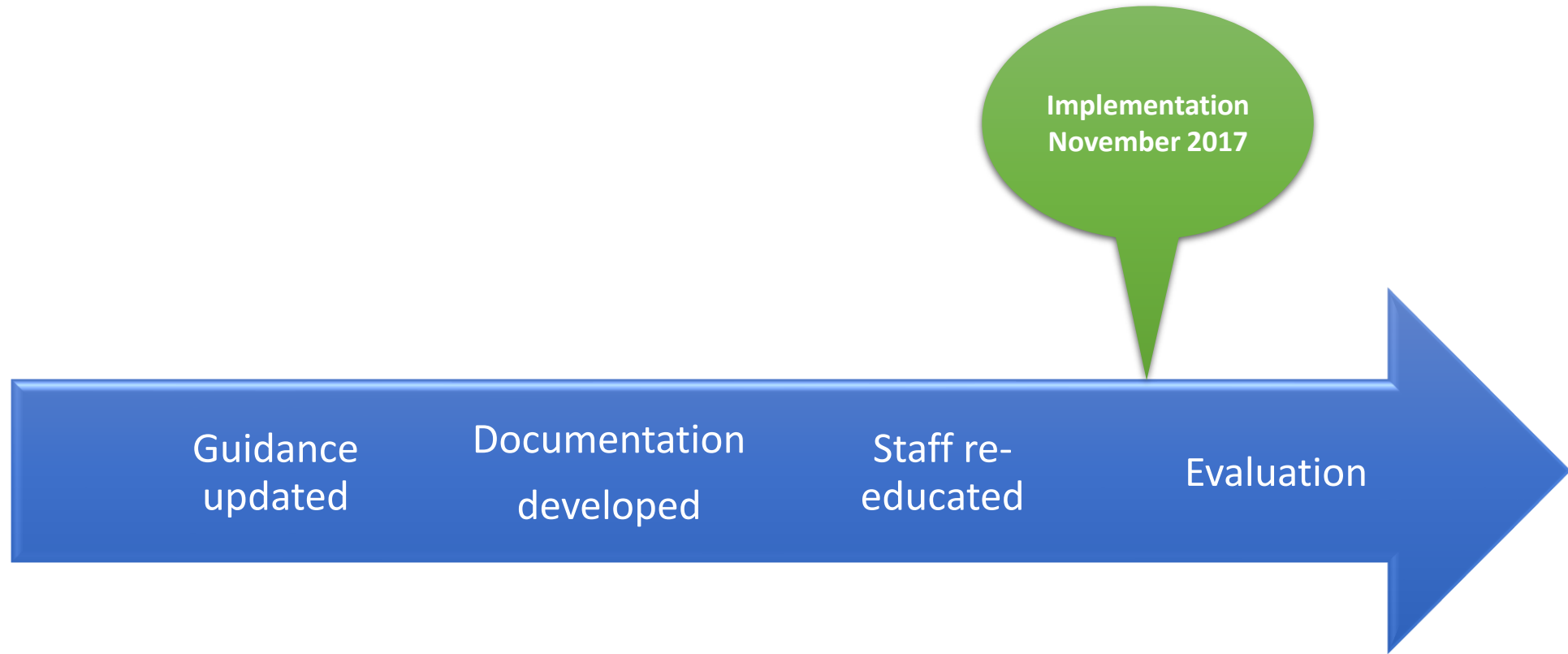
Consider **changing insulin** to a lower dose scale (move one scale to the left)

Staff familiarisation & education

Oct-Nov 2017

- Interdisciplinary
- ‘Train the trainers’ model
- Group and one-on-one teaching and support
- Intranet resources
- eLearning modules

Implementation



Data Analysis – A Major Roadblock

- Accu-chek Inform II Meter & IT1000 data management software
- BGL's data
- Collected occupancy data per ward per day
- 9 Wards - Wellington Adult Medicine & Surgery pts
- 2017 & 2018
- R Statistics

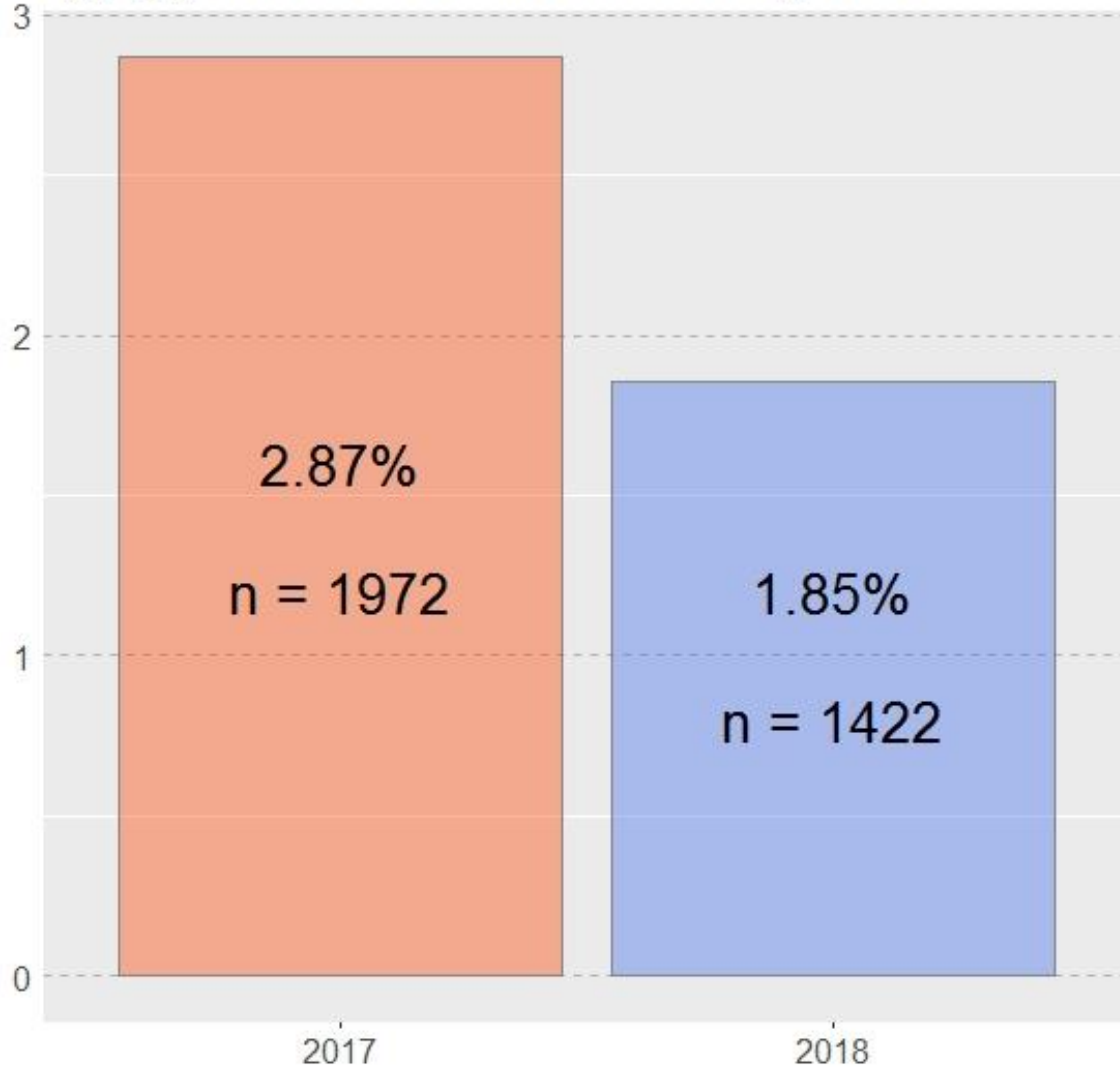


Results – BGL Testing

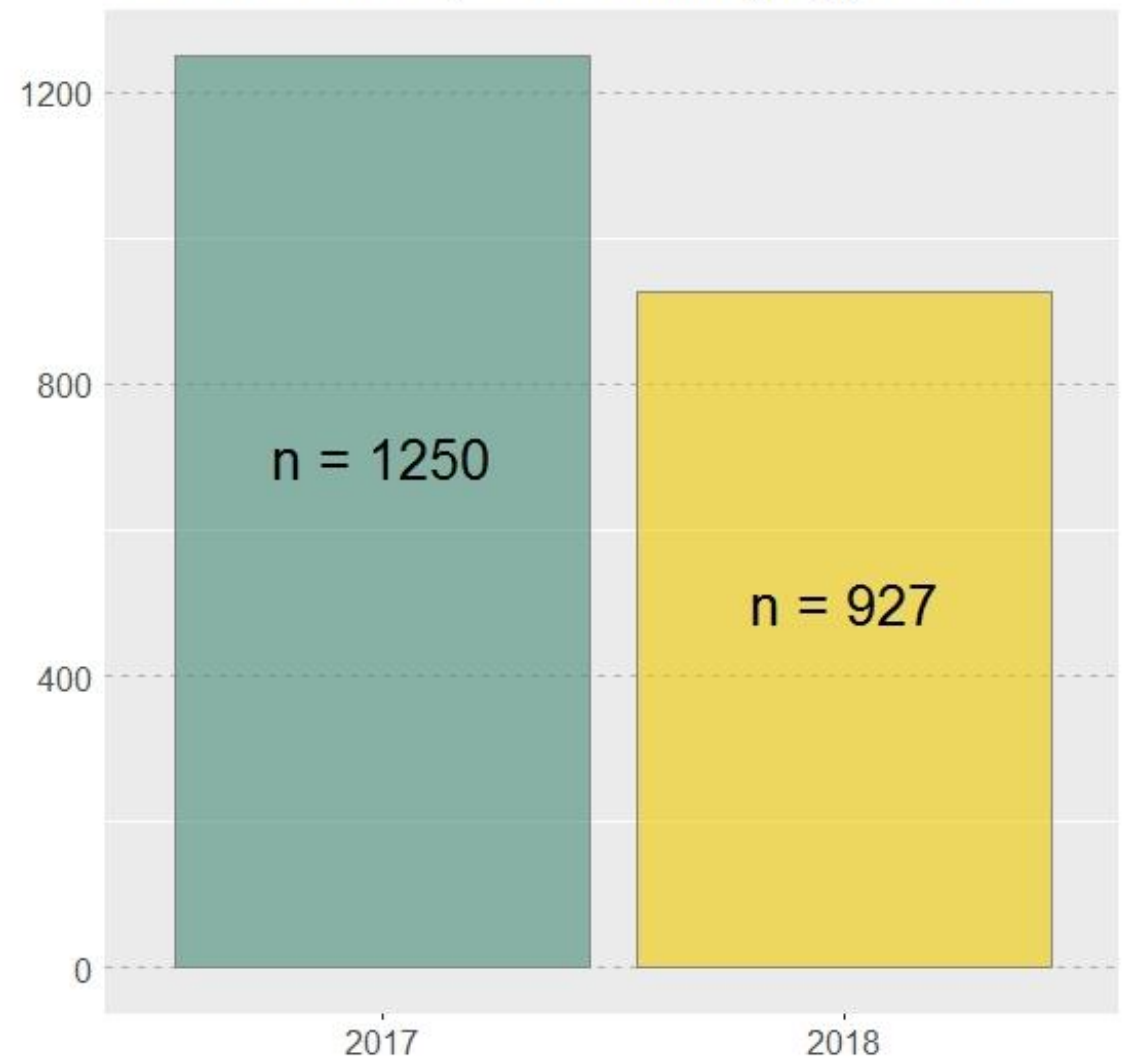
	2017	2018
Wards	9	9
Occupancy	89,263	88,665
BGL tests	68,707	76,683
No. Patients Tested	4,773	5,065

Results - Hypoglycaemia

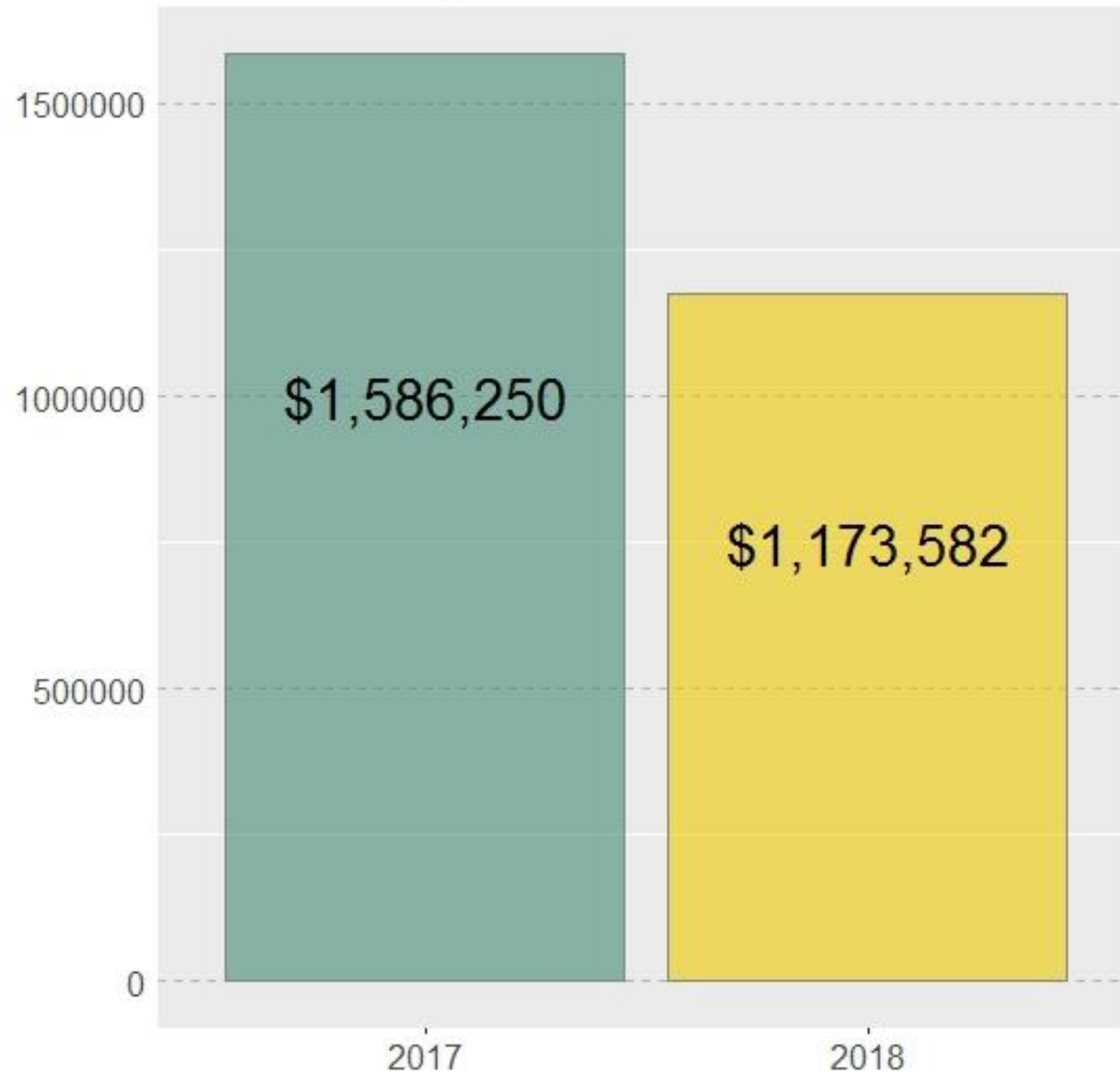
Hypoglycaemic Blood Glucose Tests by Year



Count of Patients per Year with Hypoglycaemia



Cost of Hypoglycaemia per Year



Estimated incremental cost of inpatient hypoglycaemia - \$1,270 per event (NHS 664 stg)

Control

- The project has been transferred to Quality Improvement & Patient Safety Team
- Chart revision
- Launch of eLearning modules
- Plan to develop glycaemia clinical dashboard for ongoing monitoring of hypoglycaemia
- Audit to look at investigate current reporting of hypoglycaemia



Take Home Messages

1. There is always more hypoglycaemia happening than we think
2. Information = raw data and a clinical data analyst.
3. Quality improvement is core business activity not a hobby and needs to be planned for accordingly.

Thanks

Dr. Brian Corley
Endocrine/Diabetes Registrar
Capital & Coast DHB

Brian.Corley@ccdhb.org.nz

Find me on Linked In

Youtube video Link: <https://www.youtube.com/watch?v=I79MUQG0nAE>

