

Blood glucose monitoring in medical inpatients prescribed steroids

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Quality Improvement Team

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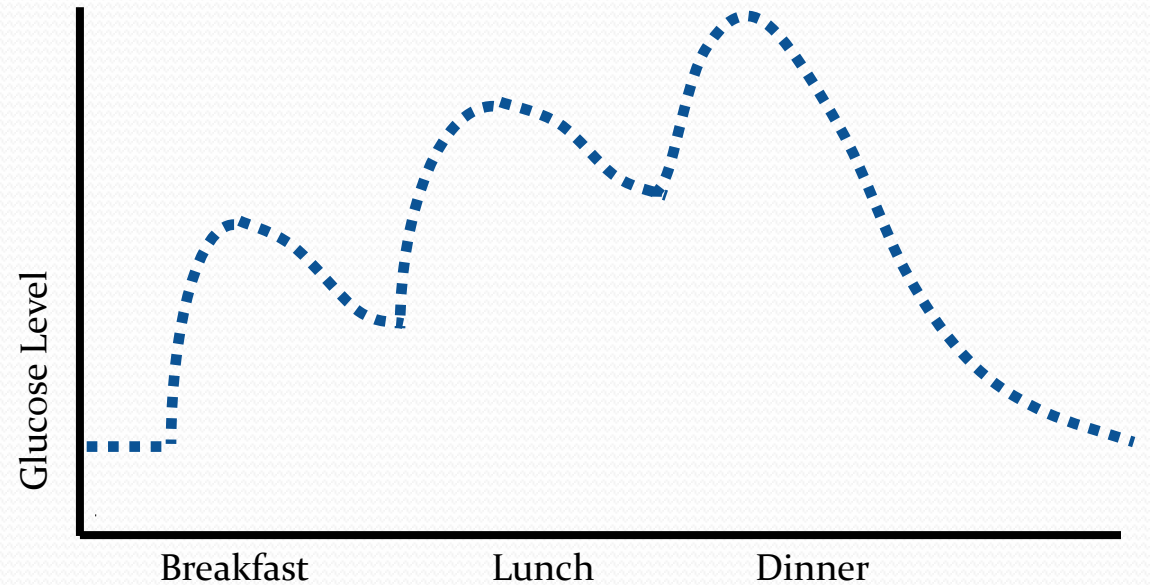
Joan Mackintosh – Lead Medical Pharmacist

Kirsten McCulloch – Lead Respiratory Pharmacist



Background

- Steroids are the main cause of drug induced hyperglycaemia by:
 - Increasing hepatic gluconeogenesis
 - Reducing peripheral glucose uptake
 - Inhibiting insulin secretion
 - Causing postprandial hyperglycaemia



Case: Mrs SR

- 64 year old lady in hospital with exacerbation of COPD
 - ABG result revealed glucose of 30
 - Not diabetic
 - Multiple courses of steroids in the last 12 months
- BM monitoring on steroids, may have prevented such high hyperglycaemia

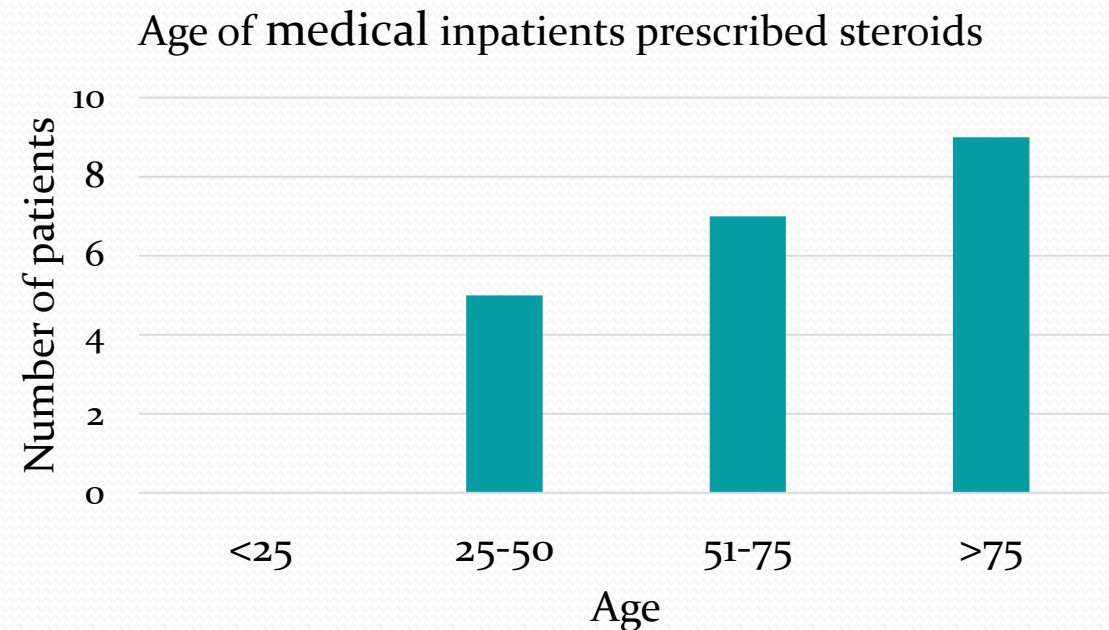
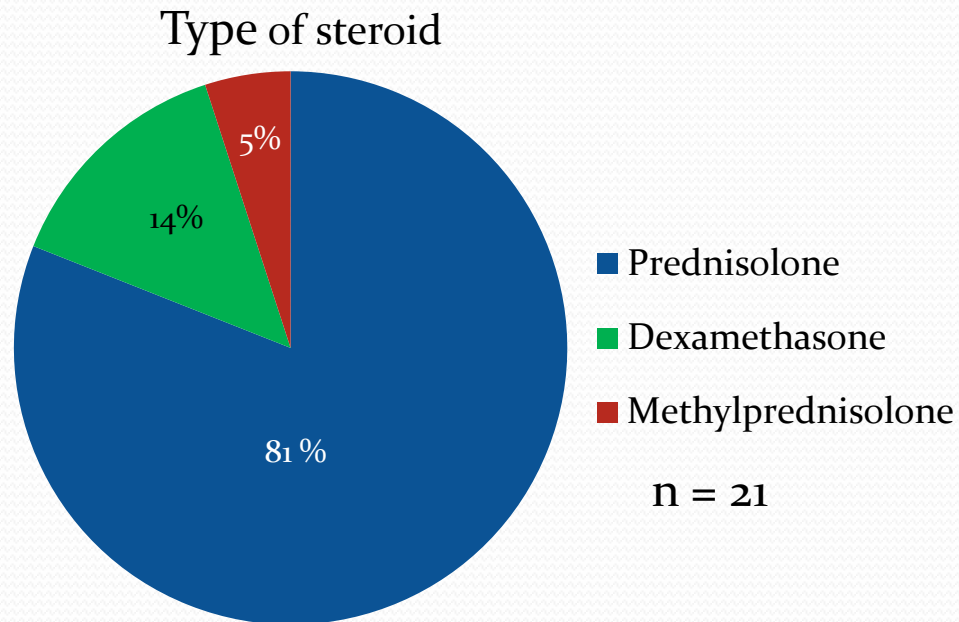


Standard

- “Patients treated with steroids [should be] screened for hyperglycaemia with blood glucose monitoring – standard 90%.”
- “This should be prior to or following lunch or evening meal when the hyperglycaemic effects of morning steroid dosing is likely to be greatest.”
- Joint British Diabetes Societies for inpatient care: Management of Hyperglycaemia and Steroid (Glucocorticoid) Therapy (2014)

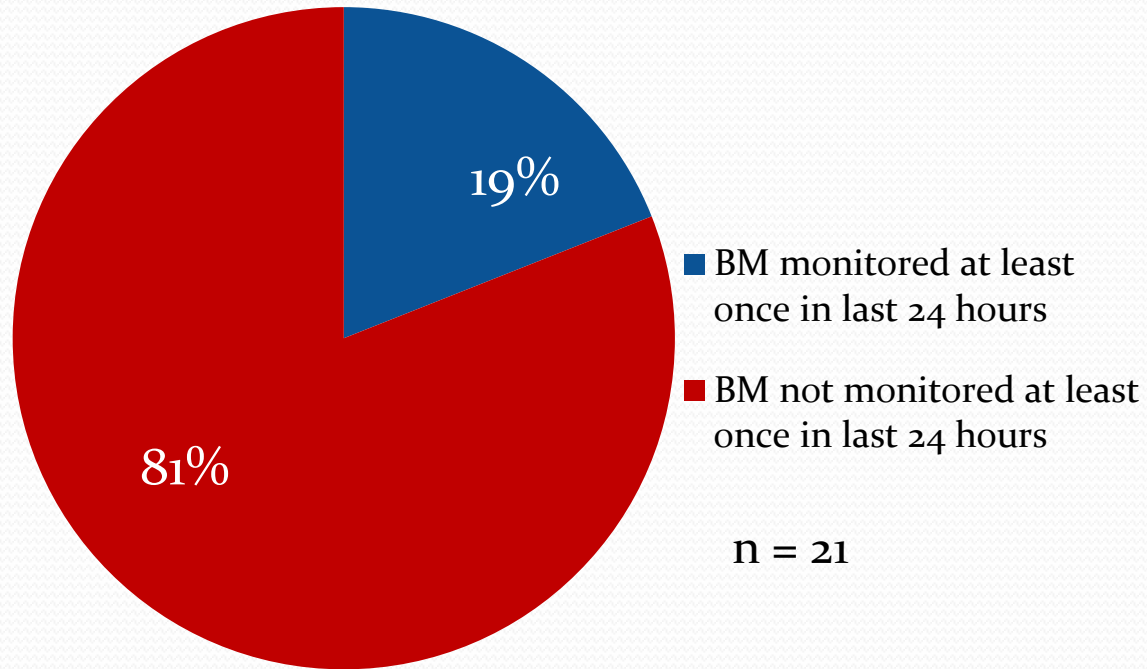
Snapshot baseline data

- 23 medical inpatients prescribed steroids in Raigmore Hospital on 25th April 2017
- 2 patients excluded as on steroids for adrenal insufficiency

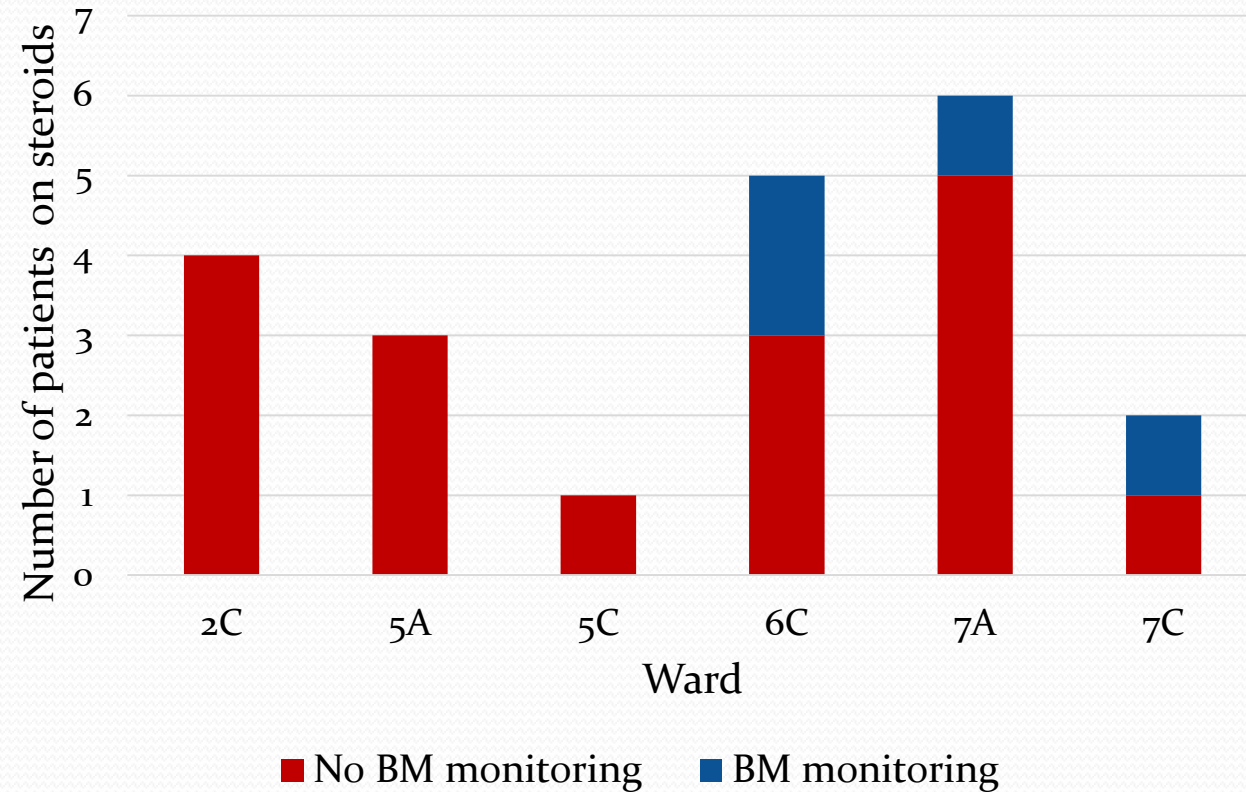


Snapshot baseline data

Medical inpatients prescribed steroids



Medical inpatients prescribed steroids



- As illustrated in Mrs SR's case and baseline data, an intervention was required to meet the standard.
- Aim
 - By 12th May 2017, at least **90%** of patients in ward 7A (respiratory) who are prescribed steroids will have blood glucose monitored before evening meal.
 - If BM is >11, monitoring will be increased to 4 times daily
 - If BM is >11 twice in 24 hours, the patient will be referred to the diabetes team.
- Exclusion
 - Patients on steroids for adrenal insufficiency

Process map

- Patient prescribed steroids



PDSA cycle 1: Sticker on drug kardex
visual trigger for BM
monitoring

- Steroids administered



- Blood glucose monitored once daily before evening meal

**This
patient is
prescribed
steroids**

1. Please monitor
BM before evening
meal

2. If BM >11,
increase monitoring
to four times daily

3. If BM >11 twice in
24 hours, please
refer to diabetes
team below:

High-UHB.DiabEndoCalendar@nhs.net

Test of change in ward 7A (respiratory)

- Measure number of ward 7A patients on steroids and whether BMs are monitored appropriately

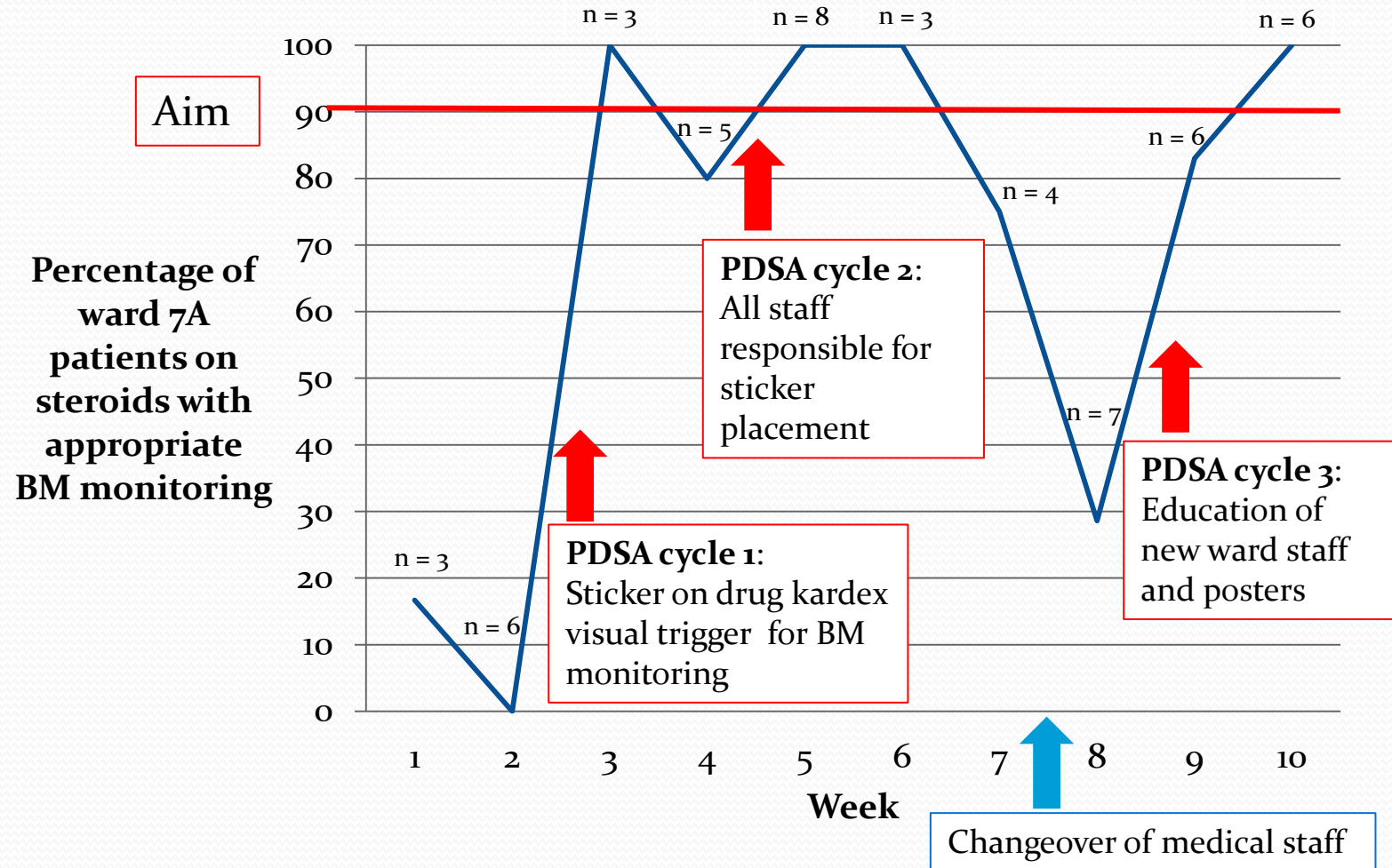
- Education of nurses, ward pharmacist and doctors
- Attended 3 different staff huddles, morning safety briefs
- Ward pharmacist to place sticker

- Further education of ward staff:
 - Use of BM charts alone for blood glucose monitoring



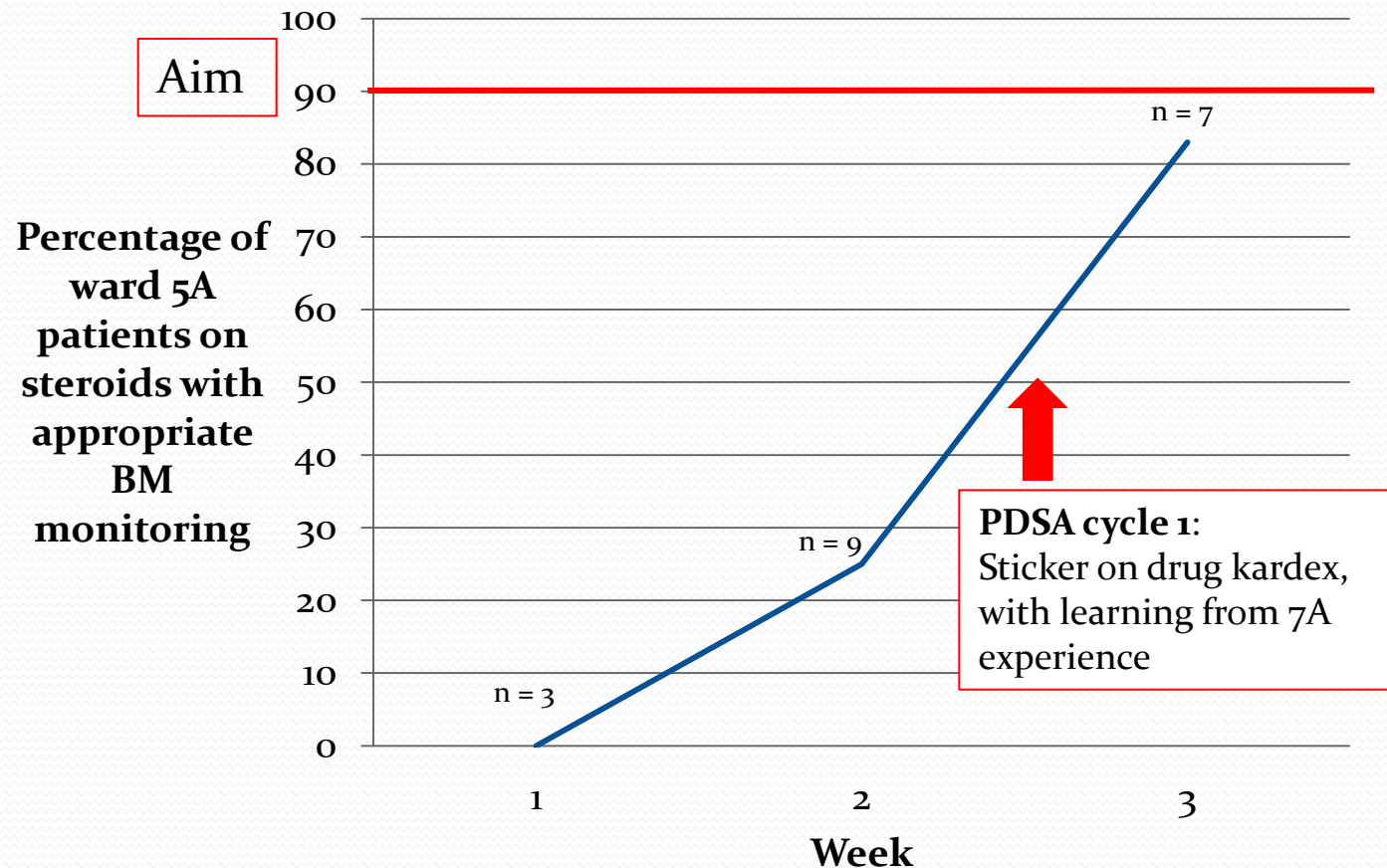
- PROCESS: number of patients on steroids that have a sticker on kardex – **100%**
- OUTCOME: number of patients on steroids having BMs monitored as per sticker instructions – **100%**
- No patients had BM >11 so none escalated
- Some BMs recorded on NEWs charts, some on BM charts

Runchart – ward 7A (resp)



- What difference has been made?
 - More patients on steroids are being monitored for hyperglycaemia.
 - Blood glucose monitoring is occurring at the correct time of day.
 - There is guidance on when and how act when hyperglycaemia identified.
 - Diabetes team now receiving referrals as a result of stickers.

Runchart – ward 5A (haem/onc)



- Mr CC
 - Lymphoma
 - RCHOP-methotrexate
 - 100mg prednisolone 5 days
 - T2DM
 - Diet controlled
- BMs measured according to sticker
 - BM consistently >11
 - Diabetes review
 - Plan for next cycle
 - Gliclazide
 - 80mg BD (steroid days)
 - 40mg BD (48 hours post steroids)

Next steps

- Continue to measure ward 7A and 5A data weekly
 - Ensure patients with hyperglycaemia are escalated appropriately
- Recently introduced stickers to medical receiving unit (ward 6A)
- Concentrate on August inductions for education of new staff
- Present QIP at medical audit afternoon (October)
 - Educate all medical staff
 - Encourage use of stickers in other medical wards
- Need to evaluate impact on workload of diabetes team