

Continuous Glucose Monitoring (CGM) in Hyperinsulinism

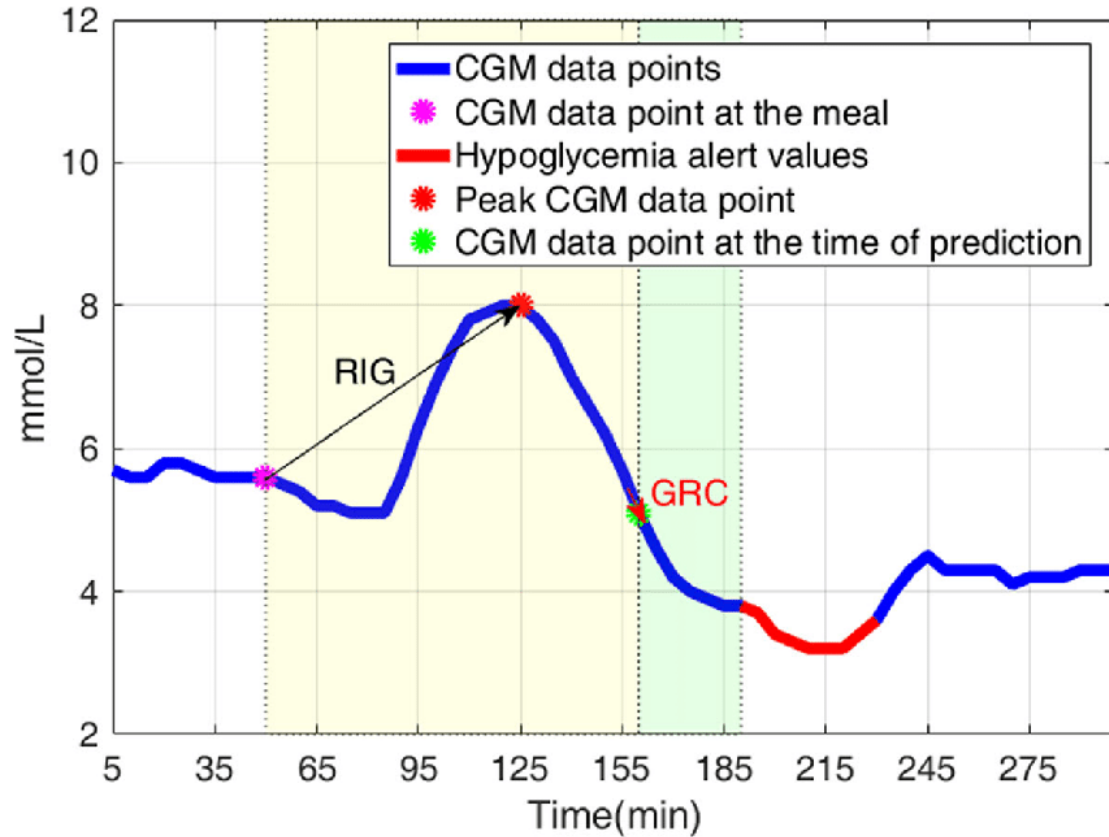
- The case for qualified use

Indi Banerjee



ROYAL
MANCHESTER
CHILDREN'S
HOSPITAL

CGM in diabetes – valid use for routine use

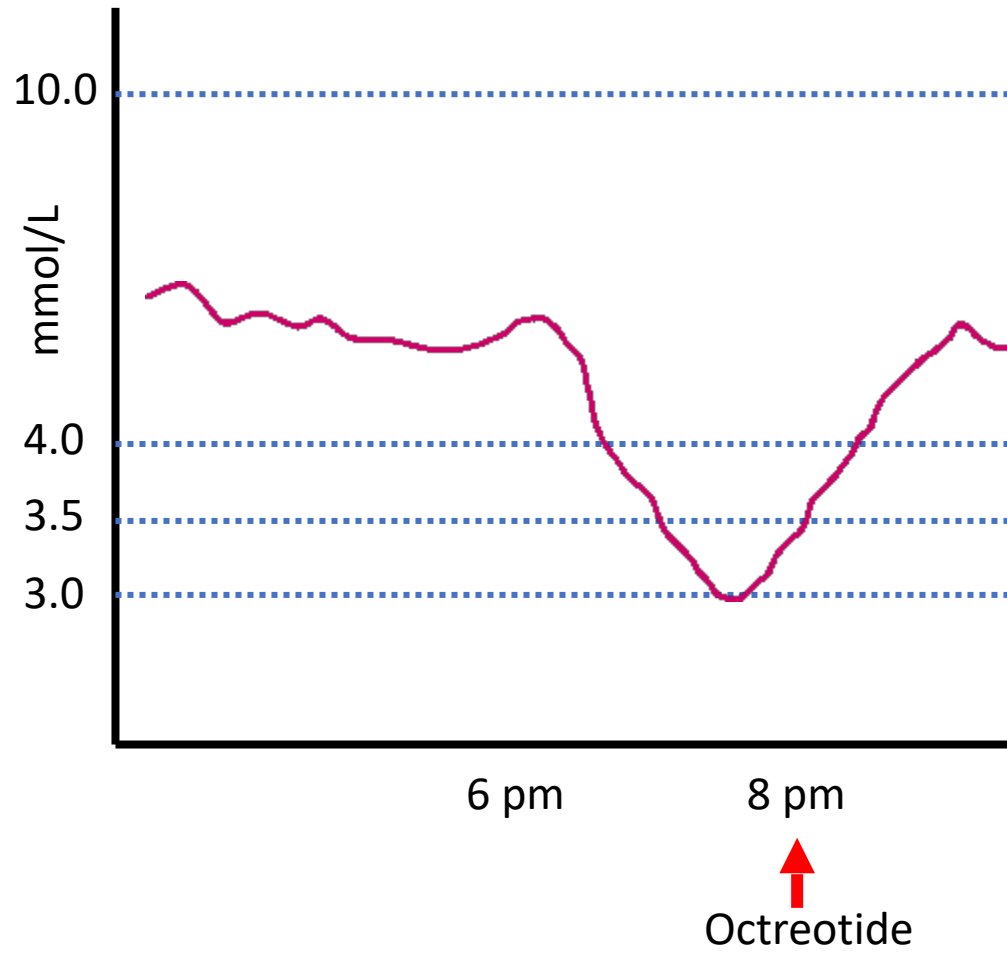


RIG = Rate of Increase in Glucose
GRC = Glucose Rate of Change

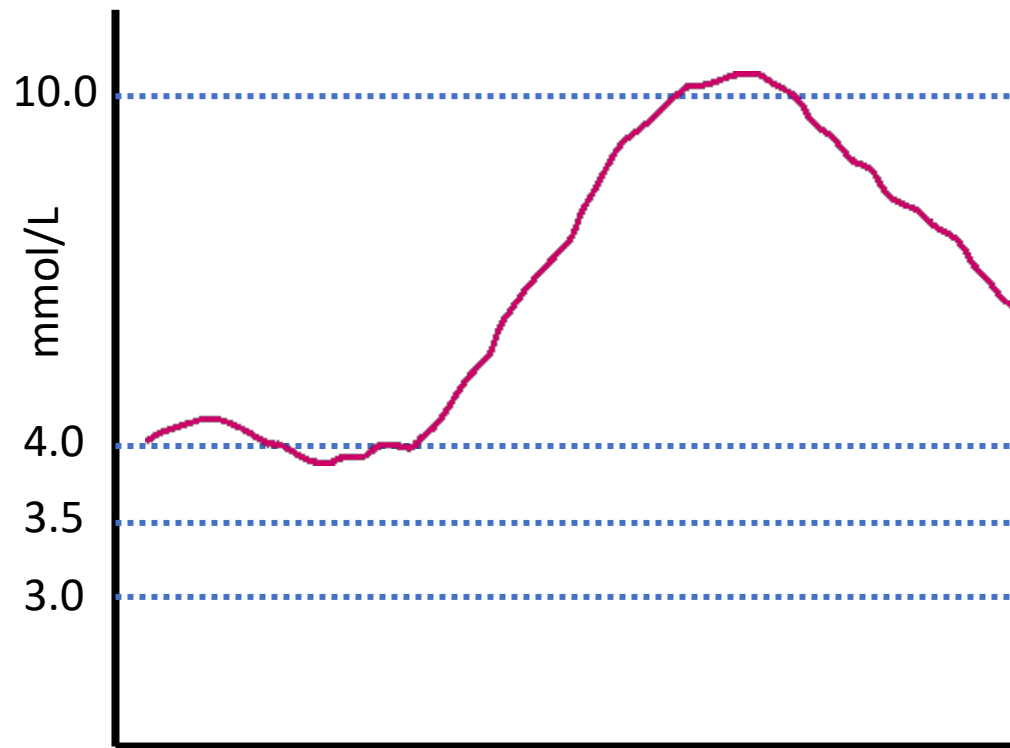
But CGM in HI?

- Not Diabetes!
- Insulin release not always related to food/activity
- No prospective studies showing success

CGM to optimize Octreotide treatment – Reduce risk of hypoglycaemia



CGM to optimize Octreotide treatment – Reduce risk of hyperglycaemia



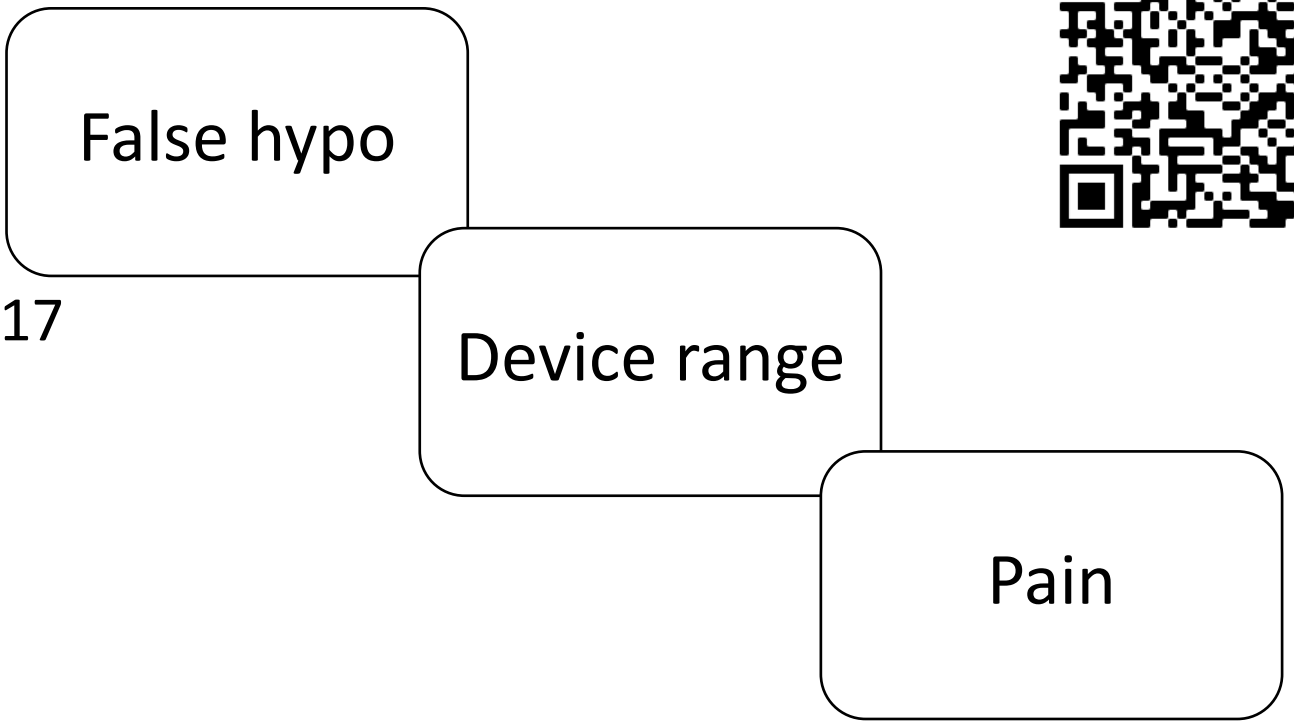
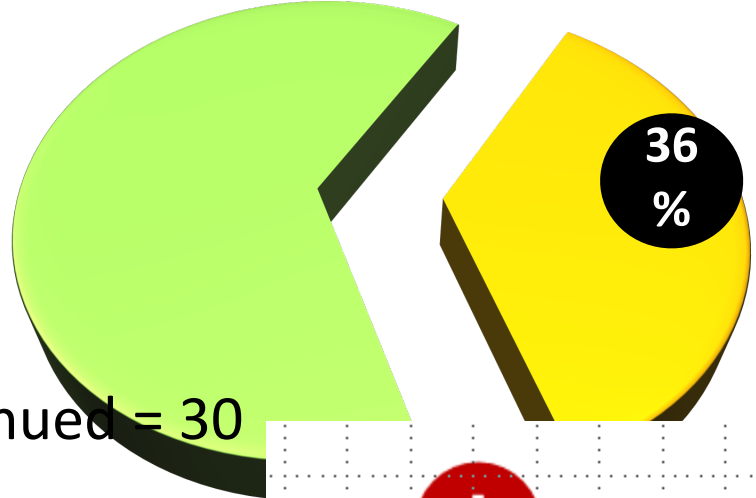
↑
Octreotide = 25 mcg

CGM could be better..

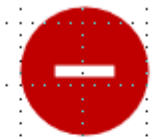


Sam's poster

CGM discontinued = 17



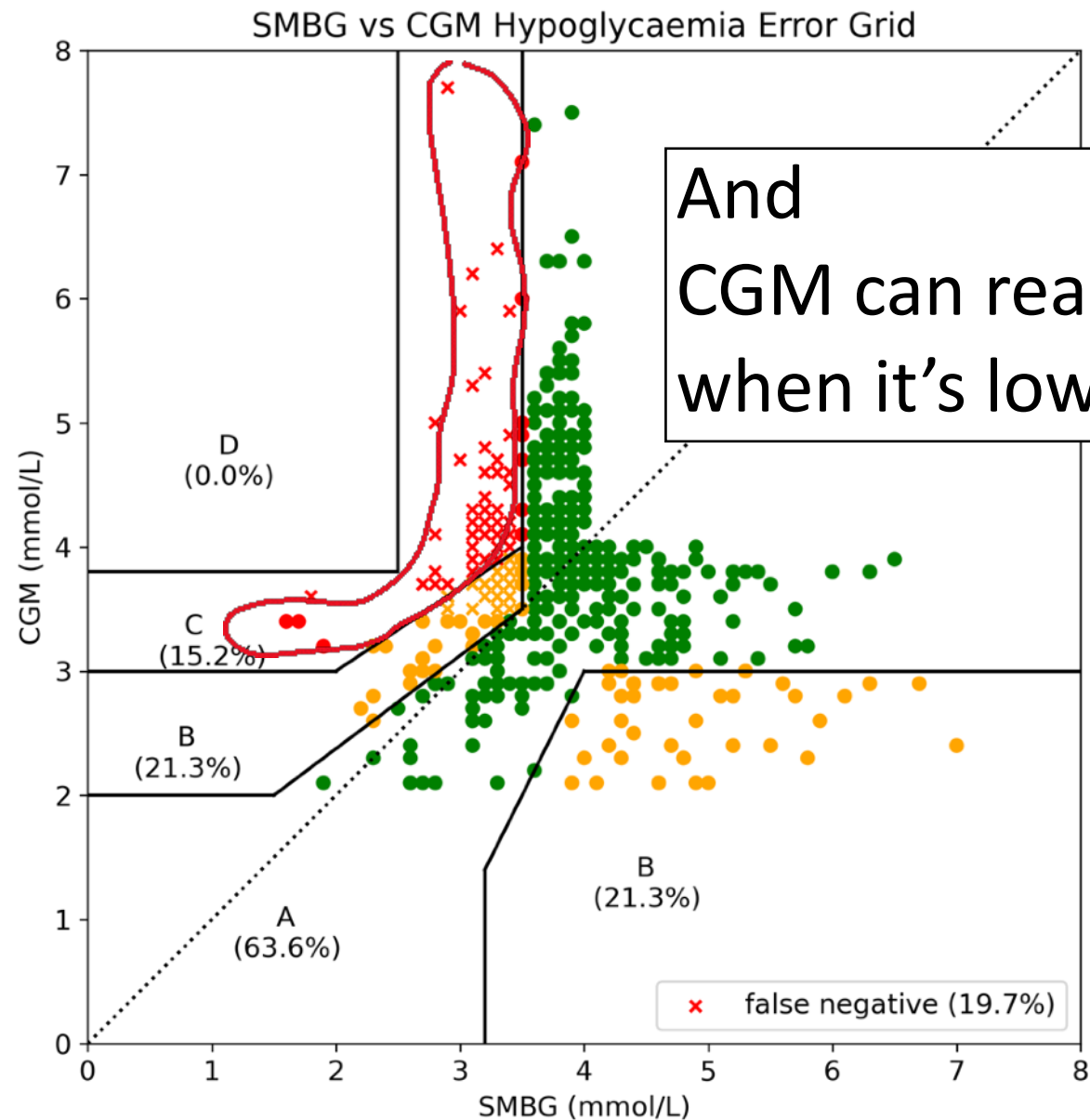
Sameera's poster



Themes to improve

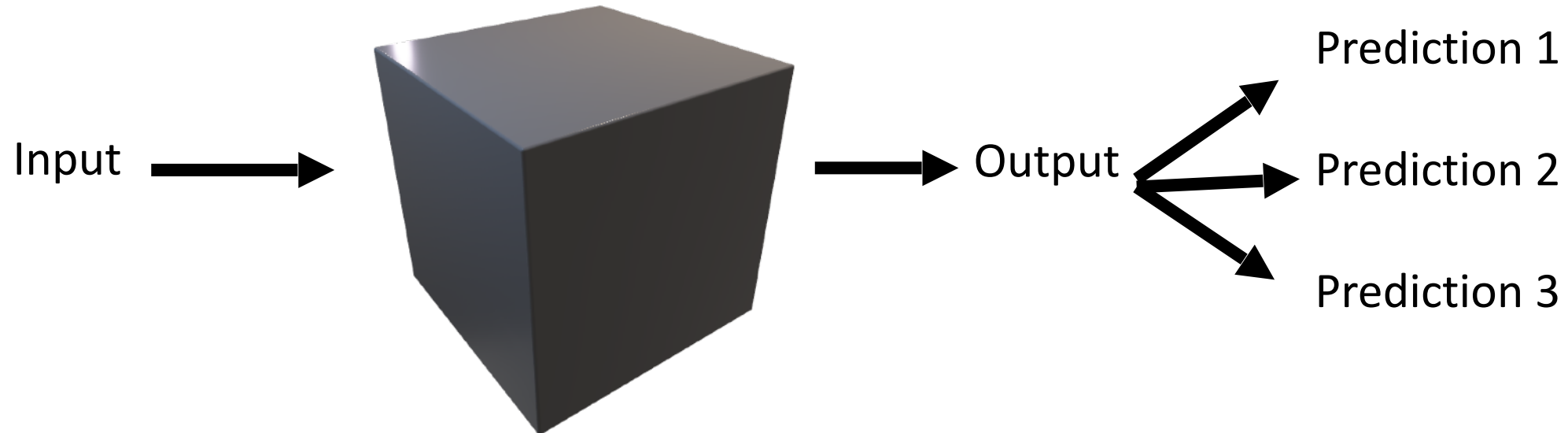
Positive Experiences	Educational Tool	Behavioural Change	Negative Experiences	Design Improvements
<i>Factors regarded as positive/helpful</i>	<i>Learning from CGM to improve management</i>	<i>Changes to routine due to CGM</i>	<i>Factors regarded as negative</i>	<i>Refinements to design of CGM</i>

Sensitivity to identify glucose <3.5 mol/L = 44%



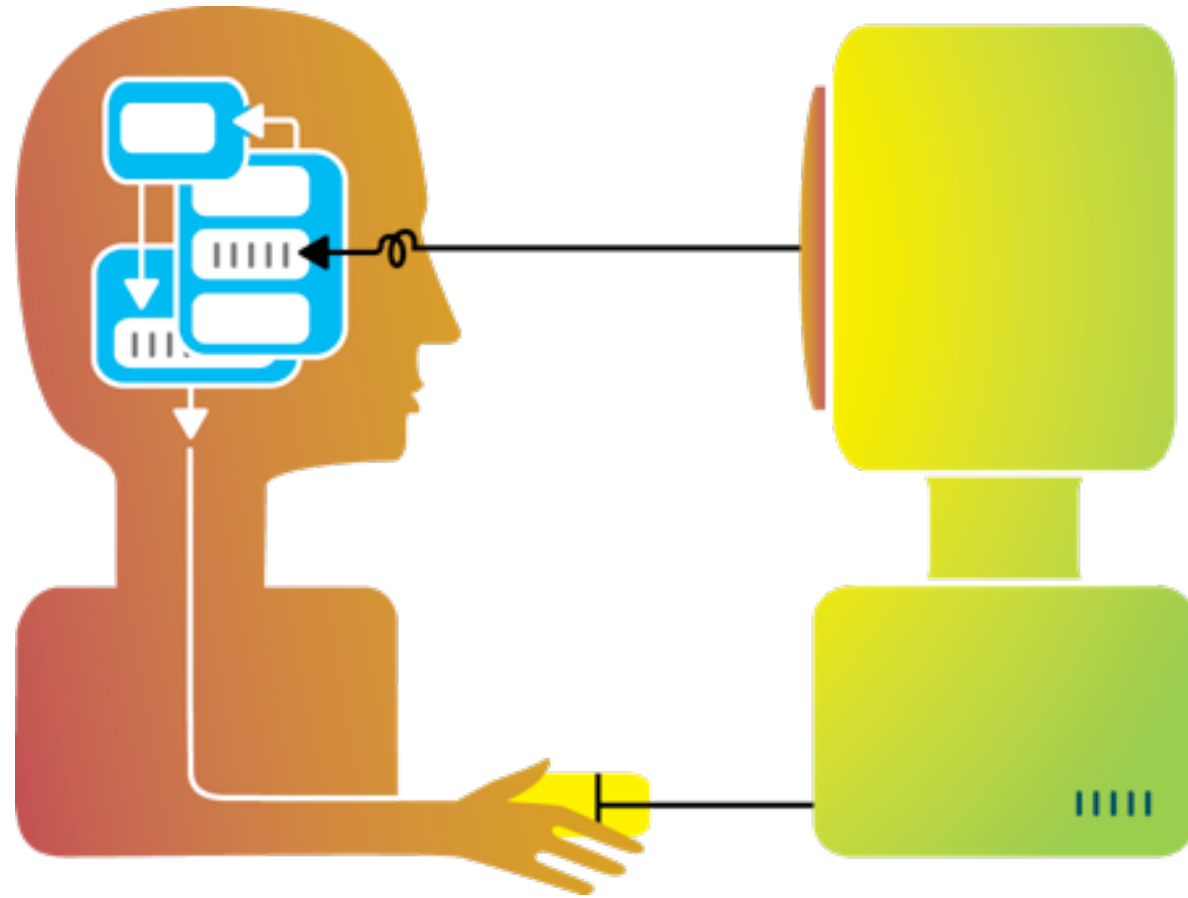
And
CGM can read normal
when it's low!

Machine Learning in CGM

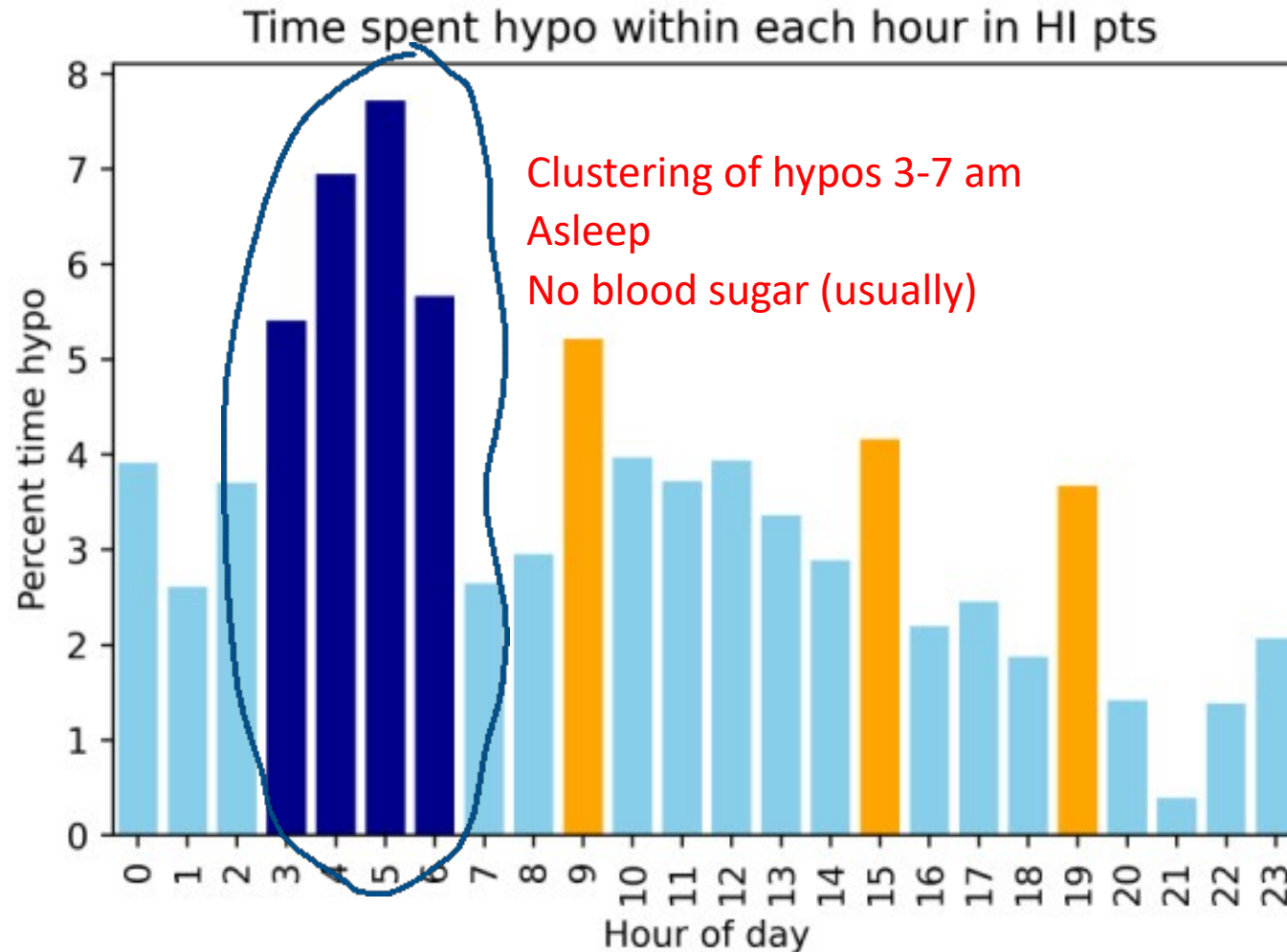


Chances of success in accurate prediction of hypo?

Human Computer Interaction



Not to ignore patterns we already know –the problem of night hypos



Simple use of CGM as a Hypoglycaemia detection machine may not improve Time Below Range (TBR) (hypo)

10 patients

4 weeks

Blinded

Average TBR 3.5%

259 hypo episodes

4 weeks

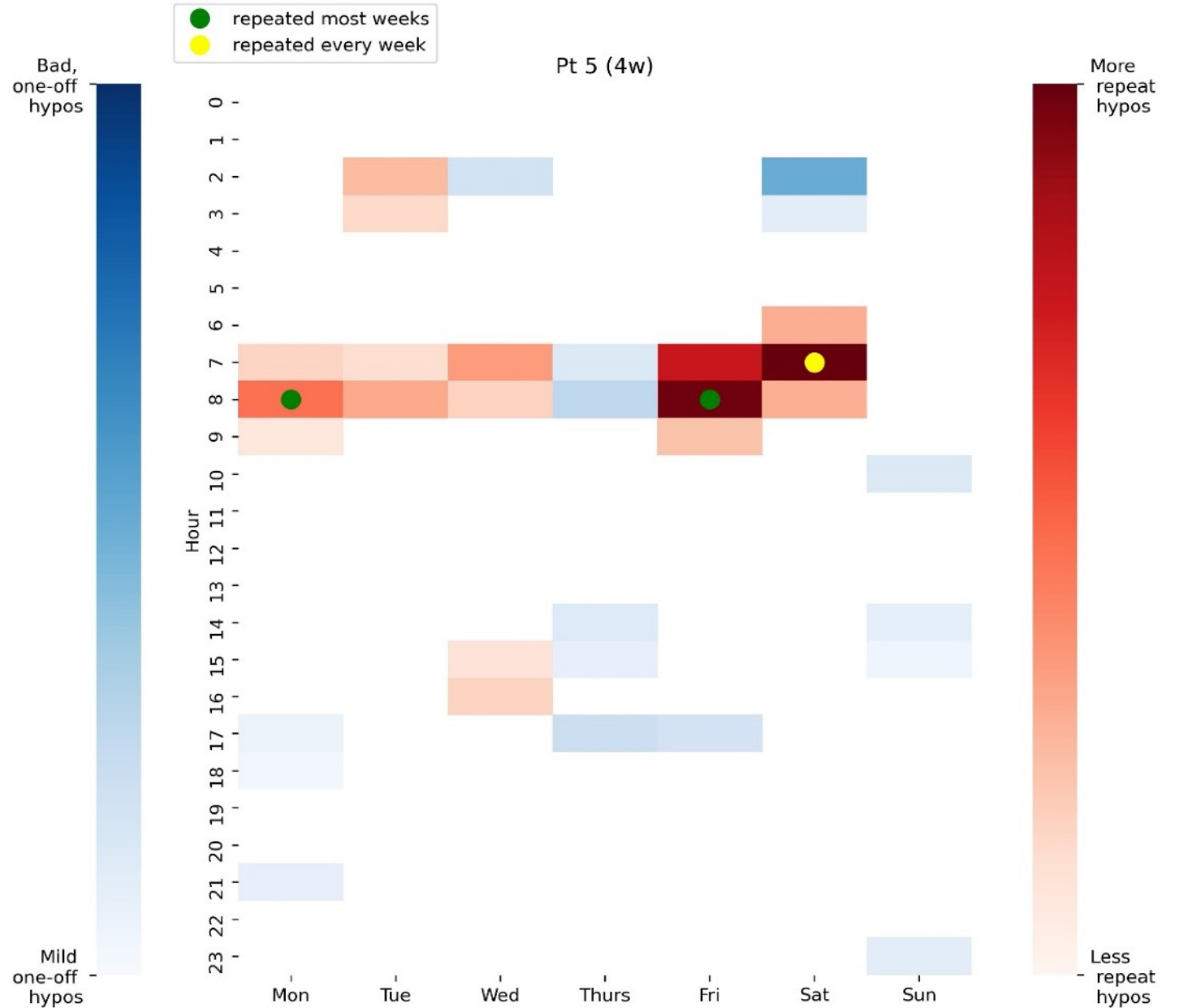
Unblinded

Average TBR 3.5%

269 hypo episodes

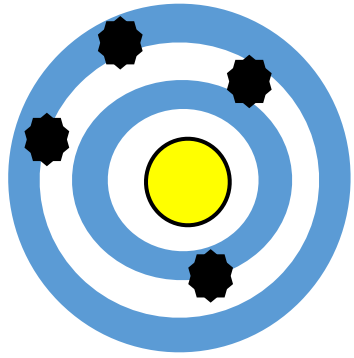
Worth et al, in review

HYPO-CHEAT HYpoglycaemia- Prevention- thrOugh-Cgm- HEatmap- Assisted- Technology

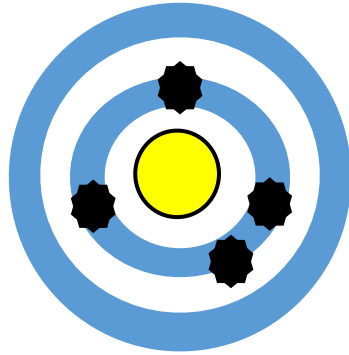


Worth et al, in review

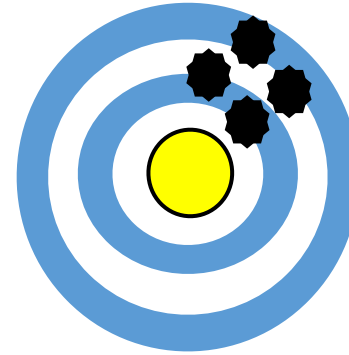
Accuracy versus Precision



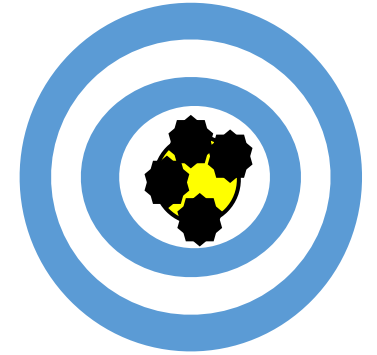
Not Accurate
Not Precise



Accurate
Not Precise



Not Accurate
Precise



Accurate
Precise

A future for CGM...

Maria Salomon Estebanez
Karen Cosgrove
Chris Worth
Sumera Ahmad
Sarah Worthington
Elaine O'Shea
Ramya Gokul
Caroline Hall
Anna Nikiforovski

