

Obstetric anaesthesia data: examining the data quality, security & extraction efficiency

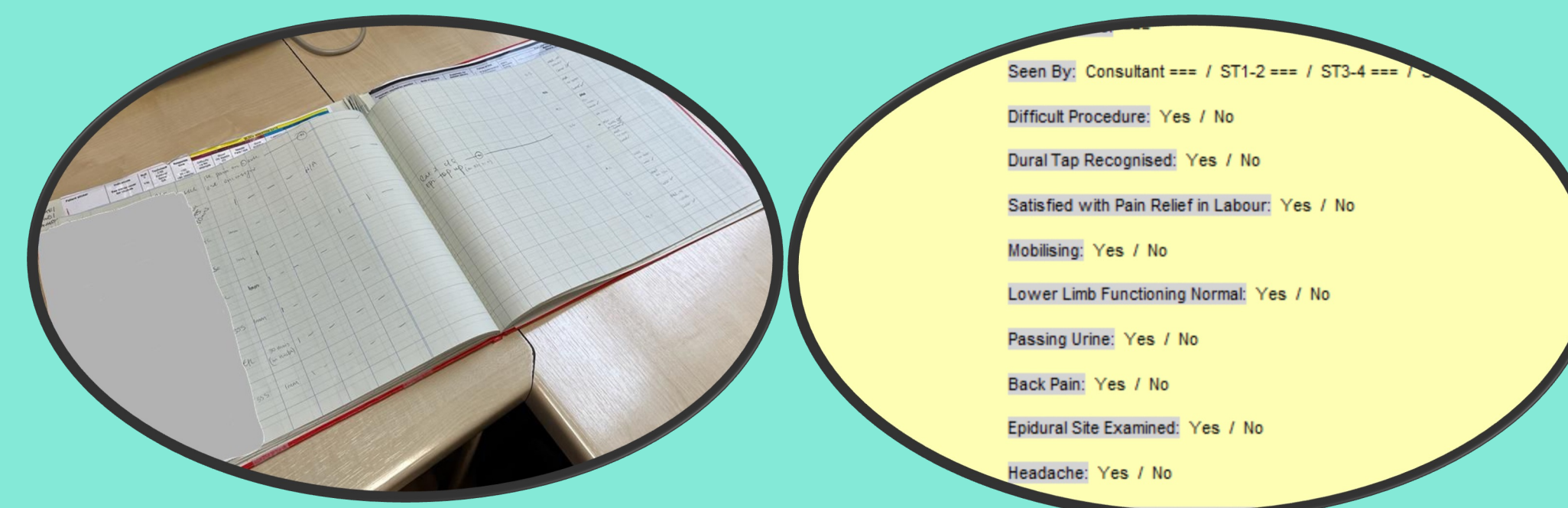
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Background: Where we were

Assessing the need for change

Implementing change: PowerForm

Next steps: Automated extraction and presentation



- Paper diary and Electronic Patient Record (EPR) "structured note"
- Paper diaries are not part of the patient record

- Manually extract data into an excel spreadsheet because automated extraction not possible
- Stored on clinicians' hard-drives
- Presented quarterly at audit meetings

- Trust wide project to improve obstetric anaesthesia data *quality, security, extraction efficiency* and *accessibility*

Methods

- Retrospective evaluation of obstetric anaesthesia quality indicator documentation¹ (local audit approval obtained; THA-067)
- Two maternity units at Imperial College Healthcare NHS Trust: St Mary's Hospital (SMH) and Queen Charlotte's and Chelsea Hospital (QCCH)
- One month's data (483 patients) extracted manually from paper diaries and the EPR

Antenatal		Follow up	
Labour mode of analgesia	Delivery mode of analgesia	Postural headache	Labour analgesia effective
Pain relief within 45 minutes	Post-delivery mode of analgesia	Neurological injury	Satisfaction with labour analgesia
Accidental dural puncture	Resite during delivery	Awareness (GA)	Satisfaction with postnatal analgesia
Resite during labour	Conversion to general anaesthesia		
Mode of delivery	Breakthrough pain		

Data items

Outcome definitions²

Data quality

- **Completeness:** % documented in the paper diary or the EPR
- **Consistency:** % agreement between the paper diary and the EPR
- **Timeliness:** % documented within 24 hours of delivery

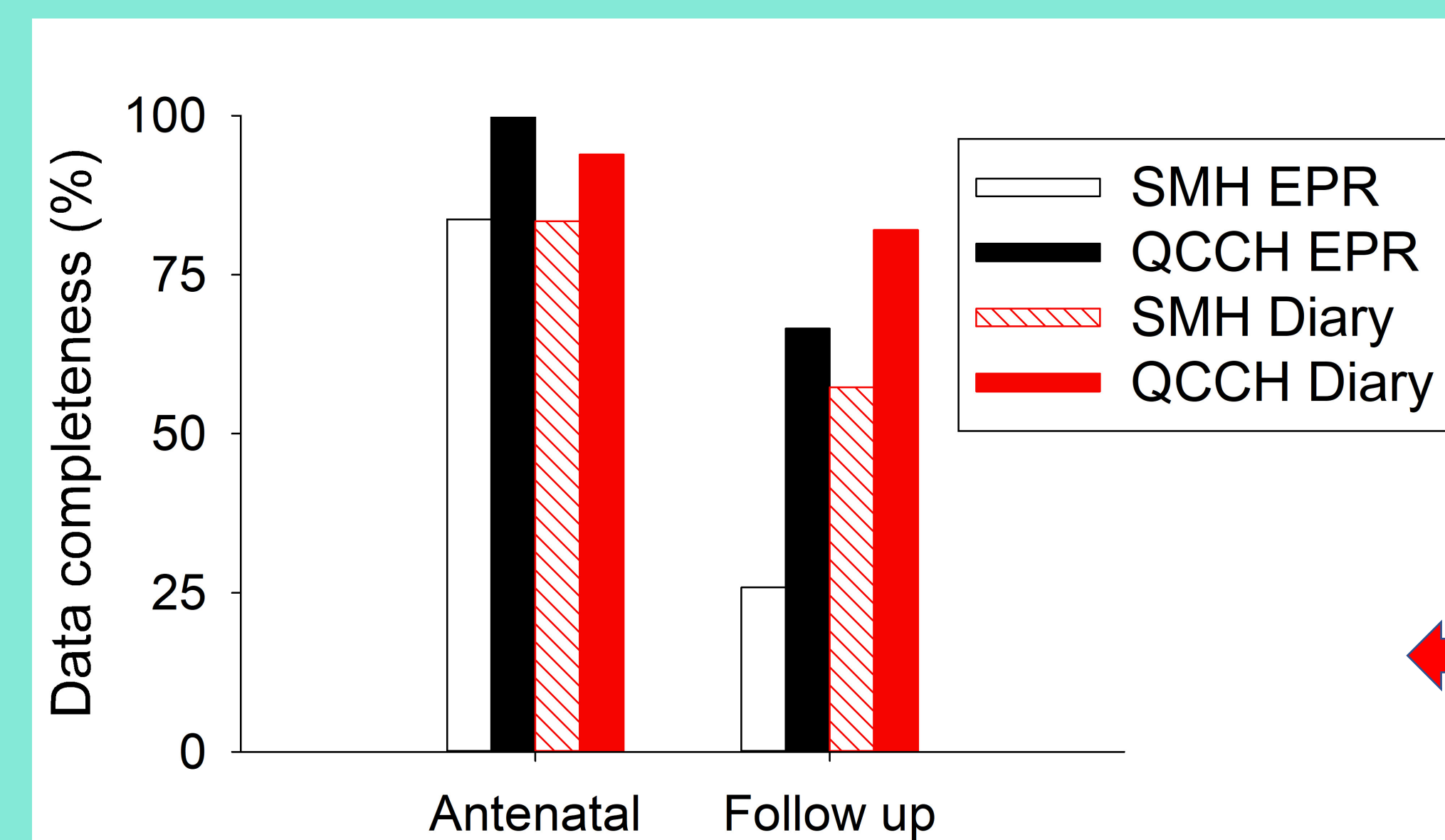
Data security

- % documented in the **paper diary** (the diary was considered insecure)

Extraction efficiency

- **Time** taken to extract data
- **Accuracy** (10% sample of the data set was double-checked by a 2nd data collector)

Results



Completeness: >90% for antenatal data items. 73% in the paper diary and 52% in the EPR for follow up data items

Consistency: 73% at SMH and 86% at QCCH (not shown in graph)

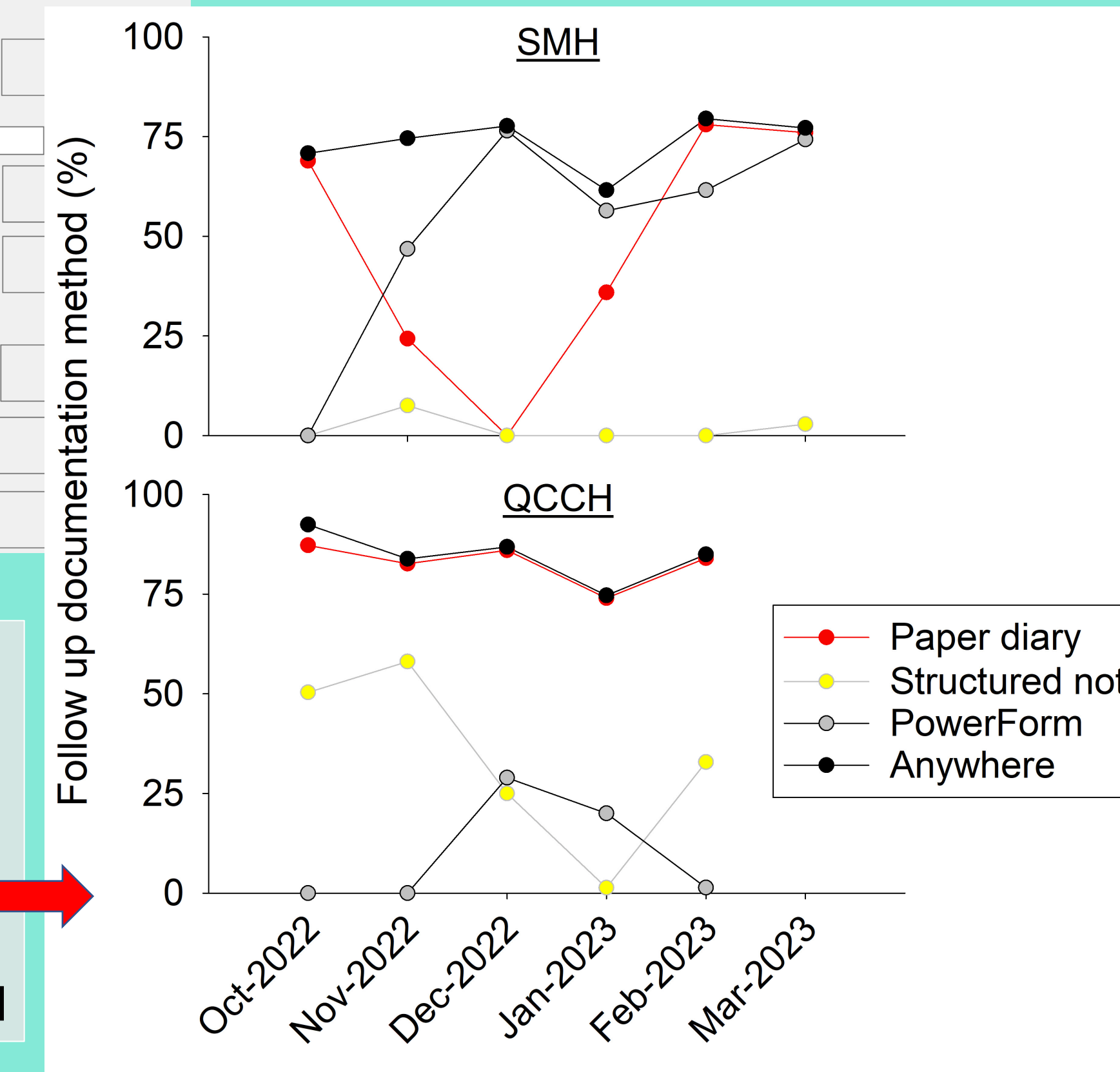
Security: 6% more data documented in the paper diary than the EPR

Timeliness: The time of follow up was not documented in 97% of cases at SMH and 46% of cases at QCCH

The screenshot shows a digital form titled 'Obstetric Anaesthesia Follow Up PowerForm'. It contains numerous checkboxes and text input fields for recording obstetric and anaesthesia data, such as 'Neuraxial blockade for labour?', 'Pain relief within 45 min?', and 'Mode of delivery'.

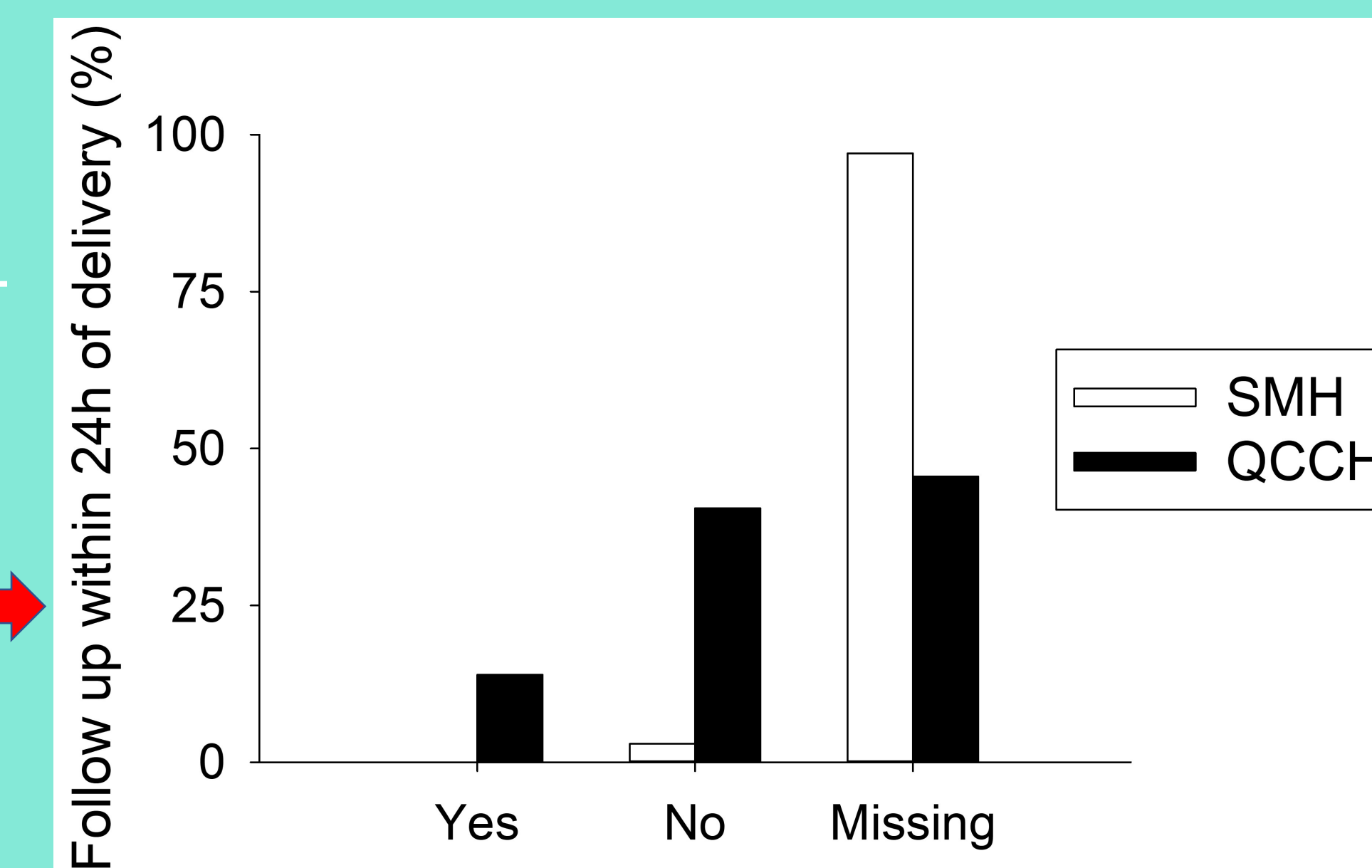
The Solution = EPR "PowerForm"

- Structured data (radio boxes + freetext boxes)
- Conditional logic
- Automated extraction



PowerForm usage:

- Introduced November 2022
- Usage – SMH ~70% – QCCH < 25%
- Work still to be done to improve usage at QCCH



Data collection time:
31h 20min

Extraction accuracy:
SMH 79%
QCCH 99%

Conclusions

Challenging, but necessary, to replace paper diaries

Manual data extraction is inefficient

Data is insecure

Follow up data is of low quality

References

1. RCoA. Raising the Standards: RCoA Quality Improvement Compendium. Obstetric practice. 4th ed 2020. p. 241-268.
2. Ramasamy A, Chowdhury S. Big Data Quality Dimensions: A Systematic Literature Review. Journal of Information Systems and Technology Management 2020;17