Imagining how intravenous insulin infusions are used in hospitals: A hierarchical task analysis

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THE WORK IN CONTEXT

Intravenous (IV) insulin infusions are the treatment of choice to reduce elevated blood glucose (BG) levels in patients during an acute illness or a period of starvation in the UK. There are benefits to using IV insulin infusions such as reduced mortality, time spent in hospital and improved wound healing; however, there have also been problems reported with its use such as variability in insulin doses, complex preparation of insulin infusion in clinical areas, and the need for frequent monitoring. The wide range and complex interplay of factors associated with the use of IV insulin infusions have resulted in errors and, in some cases, have led to patient harm. Traditional safety approaches have focused on identifying and preventing errors and have explained safety in relation to the absence of errors. Efforts to reduce errors include implementing barriers and other protective measures, but such interventions can increase the complexity of the work system and introduce unexpected consequences. An emerging approach, called resilient health care, proposes understanding the variability in healthcare practitioners' everyday work. One way to understand variability in work practices is to compare work-as-imagined: what people say, or think they do, with work-as-done: what people actually do in practice. This study aimed to explore how IV insulin infusions were perceived to be used (work-as-imagined) from the perspectives of different stakeholders and users using Hierarchical Task Analysis (HTA). This study is part of a wider project, for which there is a published protocol. To our knowledge, this is the first study exploring work-as-imagined in the use of IV insulin infusions using HTA in an English tertiary hospital.

KEYWORDS

Resilient health care, hierarchical task analysis, focus group, document analysis, work-as-done, work-as-imagined

A brief outline of the work carried out

The study was conducted between December 2018 and May 2019 in a Vascular Surgery Unit in a tertiary hospital. Two sources of data (documents and focus groups) were used to develop a hierarchical task analysis (HTA) that represented the procedure for treating elevated blood glucose (BG) using intravenous (IV) insulin. All documents (policies and guidelines) relevant to the process of treating elevated BG using IV insulin infusions were analysed. Three focus groups with stakeholders and users with different key responsibilities (guideline developers, managers, and healthcare practitioners) involved in the process of treating elevated BG using IV insulin were conducted. Reflexive thematic analysis was used to analyse data sources.

Findings/solutions (the outcome)

The final HTA diagram was developed using information from both data sources. The top-level goal was to control elevated BG using IV insulin infusions. Three main themes were identified as

key sub-goals: produce hospital specific IV insulin guidelines, implement the guidelines, and use the guidelines. The HTA clearly illustrates the complexity of using IV insulin infusions and the number of steps ideally required to achieve the key goal.

Produce hospital specific IV insulin guidelines

This process was considered an iterative process by preparing a first draft based on different resources, continually getting feedback from frontline practitioners and reviewing the clinical content and context when necessary. The guidelines were 'live' documents as they could be revised and changed when required, in appropriate situations.

Implement the guidelines

Implementing the guidelines started from launching the electronic prescribing proforma and widespread communication about the changes in parallel with making the guidelines available on the hospital intranet, then training staff about the new guidelines. The implementation happened through cascading – the chain of influence technique – in which staff influence one another in making decisions and resolving disagreements.

Use the guidelines

Different steps starting from delivering patient care, reviewing patient care, identifying and responding to deviation were identified. Although participants expected staff to adhere to the guidelines to deliver appropriate patient care, they described some intentional adaptations to provide individualised patient care.

Impact

We believe this is the first time HTA had been used to provide a comprehensive view of treating elevated BG using IV insulin infusions, drawn from the perspectives of different key stakeholders and users. Organisational influences such as how guidelines are written and work adaptations added to the understanding of work-as-imagined.

The application of HTA revealed the importance for extending the scope for understanding in depth how work is imagined and how adaptations are made in relation to the use of IV insulin infusions. This study was conducted at a single hospital and this might affect the transferability of the results. Future research, however, can build on insights from this study to develop a broader understanding of how IV insulin infusions are used.