

Human factors systems thinking analysis concerning the prescribing and administration of teratogenic medicines

Client: Health Quality & Safety Commission

Year: 2022

The Health, Quality & Safety Commission (the Commission) sought the services of hfex® to conduct a system-wide assessment of the management of antiepileptic medicines to identify opportunities for improvement and potential threats to safe medication administration by people of childbearing potential.

Antiepileptic medication are known teratogenic medicines, medication that can disturb the development of a fetus leading to congenital malformations and learning disorders such as:

- spina bifida
- cleft palate
- spectrum learning disorders.

The Commission requested that hfex® conduct a system's thinking analysis to identify:

- what the healthcare sector looks like
- how the different organisations of the health service interact to manage teratogenic medicines
- the unacceptable outcomes in the case of prescribing teratogenic medicines
- identify where controls can break down and what outcomes are likely?
- determine which organisations can best mitigate which risks.

The following details how hfex® successfully conducted this assessment collaborating with a broad range of stakeholders within the healthcare sector

hfex®'s approach

Interviews, research, and stakeholder mapping. hfex® conducted semi-structured interviews with a multitude of stakeholders, including consumers, representing the healthcare section. Stakeholders included specialist health practitioners, senior medical officers, colleges, commissions, medication safety organisations, and Ministry of Health representatives.

Systems Theoretic Accident Model and Processes (STAMP). The interview data and support documentation enabled the construction of a hierarchical control structure. This map detailed how each organisational entity interact with one another

Systems Theoretic Process Analysis (STPA). hfex® conducted an STPA on the hierarchical control structure to identify how each organisational interaction could potentially breakdown and determine what the mitigations would be. The benefit of taking this approach is that is a methodical way to consider the whole system – in effect making 'known' what is 'unknown', which is a common limitation with tradition risk management.

Forum presentation and task assignment. hfex® presented the findings back to a nationwide healthcare quality forum. Tasks identified from the STPA were assigned to each organisation.

Challenges

The biggest challenge was getting time with each of the stakeholders. This project was conducted in the middle of the Covid-19 Pandemic, and as a result many stakeholders had conflicting priorities.

With a bit of flexibility and focus from both hfex® and the Commission, interviews were successfully conducted, making best use of the time available.

Benefits and outcomes for the client

The findings of this review provided the Commission with the following:

- provided a novel approach to understanding how the healthcare system interacts in the governance of teratogenic medicines
- a system's thinking assessment of controls, how they occur, how they break down and what can be done about them
- recommendations for changes to be made within the healthcare system
- future direction to enable collaboration between healthcare agencies.



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