RESEARCH SNAPSHOT

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A solution to the 'anaesthesia gap'?

Vulnerable populations in humanitarian crises and resource-limited settings are most affected by the 'anaesthesia gap'- a lack of safe, effective anaesthetics and availability of trained anaesthetists. Ketamine, an ultra-low-cost drug, may provide a solution.

ESM-Ketamine: for 'when there is no anaesthetist'

Every Second Matters for Mothers and Babies - Ketamine for Painful Procedures and Emergency Caesarean Section (ESM-Ketamine) is a package of measures designed to be used in contexts where there is no anaesthetist.

This study helped gain a clearer picture of the feasibility, safety and cost-effectiveness of ESM-Ketamine in humanitarian and resource-limited settings. A manual was produced to support surgical providers in delivery of the package. Further work is ongoing by the study team to scale up and test the intervention in low-resource settings.

This ESM-Ketamine provider is preparing to support an emergency operation when no anaesthetist is available. Photo taken by Dr Thomas Burke.

Background

Scarce anaesthesia services are a primary reason that 5 billion of the world's 7.4 billion people do not have access to emergency and essential surgery when necessary. This includes for caesarean deliveries (the most common emergency operation on earth). This 'anaesthesia gap' is the cause of considerable suffering and even deaths. In resource-limited settings, ketamine has been used for decades as an anaesthetic in a widespread but unregulated fashion, without structure, protocols, or guidelines. There has therefore been little evidence available to guide the use of ketamine within a primary care pathway.

The aim of this study was to evaluate the safety and feasibility of the ESM-Ketamine package for surgical procedures in resource-limited settings.

How the research was conducted

The ESM-Ketamine package was used for patients requiring emergency or life-improving surgeries in fifteen facilities in Kenya. The study took place in Mandera, Garissa and Turkana Counties, resource constrained settings with large refugee camps and nomadic populations. A mixed-methods approach assessed safety, feasibility and cost-effectiveness of the ESM-Ketamine package, including demand, acceptability, and practicality. Key-informant interviews captured perceptions of facility staff.

Key findings

- During the project period, a total of 1216 operative procedures were supported with ketamine.
- 425 (21.4%) cases were emergency cases, of which 236 were caesarean sections, 125 were laparotomies, and 9 were open fixations of fractures.
- 85% of patients reported positive experiences with the ESM-Ketamine package when it was used in support of emergency and essential surgeries when no anaesthetist was available, and 95% would recommend it to a friend.
- Ketamine is a cost-effective drug, even if only used for caesarean sections.

Implications for humanitarian practitioners and policymakers

Ketamine may be a cost-effective and safe drug to help address a primary barrier to provision of emergency and essential surgery in humanitarian and low-resource settings. The ESM-Ketamine package provides guidance for providers in utilising ketamine. The study team has secured funds to expand ESM-Ketamine to 15 additional facilities across Kenya and over 2000 cases have been supported as of March 2020.

Health system and development organization leaders considering deploying the ESM-Ketamine package should note the following:

- Ketamine may provide a solution to the 'anaesthetist gap' and have application for caesarean sections in particular.
- In stable settings, engage local health officials and local hospital staff in roll-out of the package. Consider appointing 'ketamine champions', a point person for each facility, to support data collection and clinical inquires.
- Not all patients can optimally be treated with ketamine- for example patients with schizophrenia. The goal of the manual and training is to ensure that facility staff can apply good judgement on a case-by-case basis in the use of the ESM-Ketamine package.
- The package is for use only in emergencies or where anaesthetists are not available. Training of anaesthetists/ provision of anaesthetics must remain a high priority for policymakers if we are to sustainably address the 'anaesthesia gap'.

Recommendations for future research

Key implementation science questions could be explored such as:

- How should the ESM-Ketamine package be integrated into health systems?
- How is provider performance optimized?
- How can quality of care be optimized?

Evaluation of the package in different countries and crisis contexts would also be valuable for policymakers.

About the study team

The research team has included Surgeons, OBGYNs, Emergency Physicians, Anaesthesiologists, Anaesthetists, Epidemiologists, Behavioural Economists, Computational Scientists, and Public Health experts from the Massachusetts General Hospital, Harvard University, the Cleveland Clinic, Boston University, the Kenya OBGYN Society, the College of Surgery for East, Central and Southern Africa (COSECSA), and County health leaders in Kenya.

The Principal Investigator was Thomas F. Burke MD, of Massachusetts General Hospital.

Keywords

Ketamine, emergency surgery, anaesthesia gap, essential surgery, global surgery, global anaesthesia

Articles and further reading

- Outputs and further links can be found on Elrha's site: https://www.elrha.org/project/every-second-matters-ketamine-humanitarian-crisis/
- A separate paper on cost and value creation is forthcoming from the study team.
- Further outputs will be produced by the study team, documenting the experiences of the scale-up effort in Kenya.

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