Supplementary Material: Box 1. The Zimbabwe case: Adapting to implement WHO's IRTEC registry.

A general surgeon who works at multiple hospitals across Zimbabwe was interviewed on the implementation of the IRTEC registry. They noted the lack of a formalized trauma system or designated trauma surgeons in Zimbabwe. Most trauma is managed by individuals in remote district hospitals, such as junior doctors, nurses, or hospital medical officers. Trauma is most concentrated in distant areas, lacking adequate transportation to get health care. Additionally, there is no standardized protocol for managing trauma at regional centers or standardized training for hospital personnel, lacking staff training requirements, as well as an adequate referral system, and specialized trauma personnel.

The implementation of IRTEC in Zimbabwe came from the urgent need to characterize and address some of these challenges systematically. A year before implementation, a scoping review of trauma registries was conducted, making it evident that IRTEC could be the best way to consolidate individual trauma registries over time in favor of a standard system. Initial efforts to implement IRTEC were individual, with little to no institutional support or connections with WHO or the Zimbabwean Ministry of Health. Personal and professional relationships of implementers were paramount to getting started, including in the recruitment of casualty officers and others involved in the direct implementation of the registry.

IRTEC was initially implemented at two major hospitals in Zimbabwe. At the height of efforts, 25 surgeons were trained on implementation, with 3-4 people actively using the forms and collecting data. Training was mainly conducted through PowerPoint presentations to casualty officers. The cost to get started was low, below $300, and was purely self-funded. The original attempt was to take the existing hospital form and adapt it to include some of the information captured in the WHO Standardized Clinical forms, which ultimately changed towards using the WHO-provided forms to reduce expenses. Quality assessment and cross-comparison with WHO forms were performed. Collectors pointed it would be useful to interview patients twice to assess whether the information was being accurately collected.

Several barriers in the implementation process caused the implementation of IRTEC to be paused in Zimbabwe in the data-collection phase. Excessive additional time for training and collecting data under no ministry mandate was one of them, which could be addressed by an on-site team supported by the WHO and Ministry of Health, providing workforce and financial support. Adapting local billing hospital forms is expensive but might be the most effective way to change data collection. The length of IRTEC forms, inaccessible information required, and the use of confusing words were also challenges reported. Additional challenges with data collection included the current paper-based nature of hospitals, which would imply additional levels of complexity to implementing a software for registry purposes. Data clerks were used to do data collection to relieve excess workload, but it was difficult to integrate this person into the workflow. Each hospital also worked differently; thus, implementing IRTEC required understanding and adapting to these unique systems.

From the Zimbabwe perspective, implementing a standardized trauma registry must start with a top-down ministry directive. IRTEC could be a fruitful way forward, but many barriers must still be addressed before sustainable implementation is possible. With the creation of the National Surgical Plan, hopes exist around having potential better structures to support IRTEC in Zimbabwe in the coming years.