



Development of the Prehospital Emergency Care System Toolkit (PECSET) Web Application



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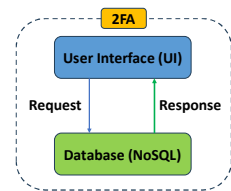
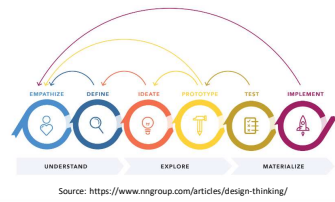
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Background & Aim

- Prehospital emergency care (PEC) is an integral part of the emergency care system and serves as an **entry point to the health system**. PEC systems remain underdeveloped in many areas of South and Southeast Asia.
- There is a need for these countries to **evaluate** and **monitor** their progress over time to **identify and improve gaps** in their PEC systems.
- We aim to develop a cloud-based PEC system evaluation toolkit (PECSET) that can be used by **developing PECs** to monitor **progress** on achieving the **basic building blocks of a PEC system**.

Methodology

- The set of quality indicators was conceived by stakeholders across Southeast Asia (SEA) using a modified Delphi consensus process.
- Agile design thinking concepts were employed to refine functionality and design continuously based on iterative feedback^[1].



- A black-box design is employed using an external configuration file for content control by administrators to minimise maintenance post-release.
- The application is fortified with two-factor authentication for a secured login.



Security Layer

Same setup for both administrators ("admin") and participants

Compatible with popular digital authenticators

New OTP required every 30 seconds

Manual registration provided

Admin Setup

Display of the user email validates the login

Users can drag-and-drop the configurations file

Pre-filled configurations template available for download for first-time admin users

Preview of the uploaded configurations provided

Messages inform users of the upload status

Importance	Category	Element	Description	Chain of Survival	Day of workflow	Implementation level
Care	Medical Direction and Protocols	Protocols for screening, triage and appropriate destination	This refers to formalized first aid instructions given by the dispatcher or telecommunicator over the phone to the general public or those to manage emergency conditions while awaiting the ambulance. For example, this would include CPR, first aid, and other instructions over the phone. Triage and destination are critical elements to address a number of emergency conditions in order to expedite the saving treatment prior to ambulance arrival.	Dispatch First Responder/Ambulance Responders/Emergency Department	1	Full/Partial/None
Care	Medical Direction and Protocols	Request assisted instructions by a First Aid, CPR/Resuscitation	This refers to specific protocols defining the types of performance and/or care (i.e. Advanced versus basic) allowed for specific conditions, as well as instructions or operational readiness for those specific cases. This includes the formal response system as well as the decision to send to the nearest health-care facility versus transporting the critical health-care facility to transport to the facility best equipped to treat the clinical condition.	Dispatch First Responder/Ambulance Responders/Emergency Department	1	Full/Partial/None

Participant View

Participants provide the implementation levels of the core elements

Core readiness elements defined in the configurations file

Non-core readiness elements defined in the configurations file

Participants provide the implementation levels of the non-core elements

Post-assessment evaluation by participants

Saved results represented in a table with indicators

Saved results categorised under chain of survival stages

Saved results grouped together based on the element categories

Conclusion

- Next steps include allowing administrators to **view and export** the **assessment results** for further analyses.
- PECSET will be **deployed in the cloud** to allow PEC leaders with internet access to use the platform easily.
- With an online platform, PECSET **empowers** the PEC leaders to **improve their performance** with the goal of **reducing mortality rates** from sensitive conditions.

References

[1] Design Thinking, Interaction Design Foundation
<https://www.interaction-design.org/literature/topics/design-thinking>

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