A workplace-based observation strategy to assess prehospital care delivery on Ukrainian ambulances

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INTRODUCTION

Current methods to evaluate the delivery of urgent prehospital care in low- and middle-income countries often rely on inadequate surrogate measures or unreliable self-reported data.[1] Building on guidance from hospital-based medical education practices,[2] we developed and employed a workplace-based observation strategy to assess **psychomotor skills** of public ambulance workers in the real-world delivery of urgent prehospital care.

AIM

To evaluate our workplace-based observation project for suitability and cost-effectiveness and to assess its use in evaluating prehospital skill performance.

METHODS

PREPARATION (Figure 1):

1) Data collection tool development
2) Observer selection and training
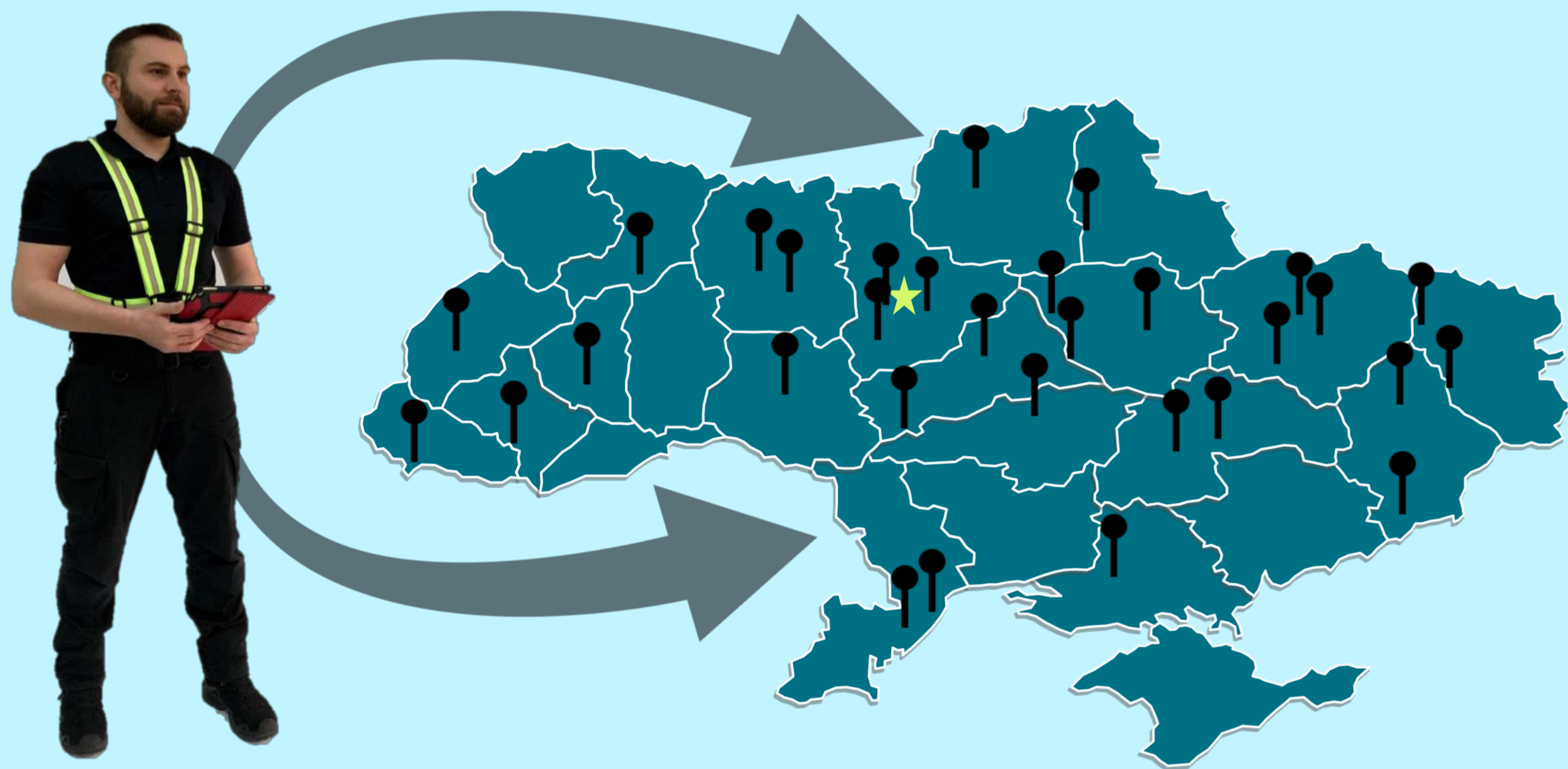3) Stratified randomized site selection
4) Trip planning and coordination

Figure 1 Trained observer teams sent to ambulance substations in randomly selected cities

IMPLEMENTATION:

1) Six trained observers sent to ambulance substations across Ukraine
2) 72-hour period of observation of urgent prehospital care provided by Advanced Life Support (ALS) ambulances at each substation

RESULTS

OBSERVATIONS:

- **30 ambulance substations** visited over **2-month period**

- **524 urgent patient encounters** observed
  - **62%** acute cardiopulmonary complaints
  - **20%** trauma
  - **54.1%** transported to hospital
  - **2.4%** died

- One patient observation and multiple interventions every 4.1 person-hour

EXPENSES:

- 6 observers and 2 administrators
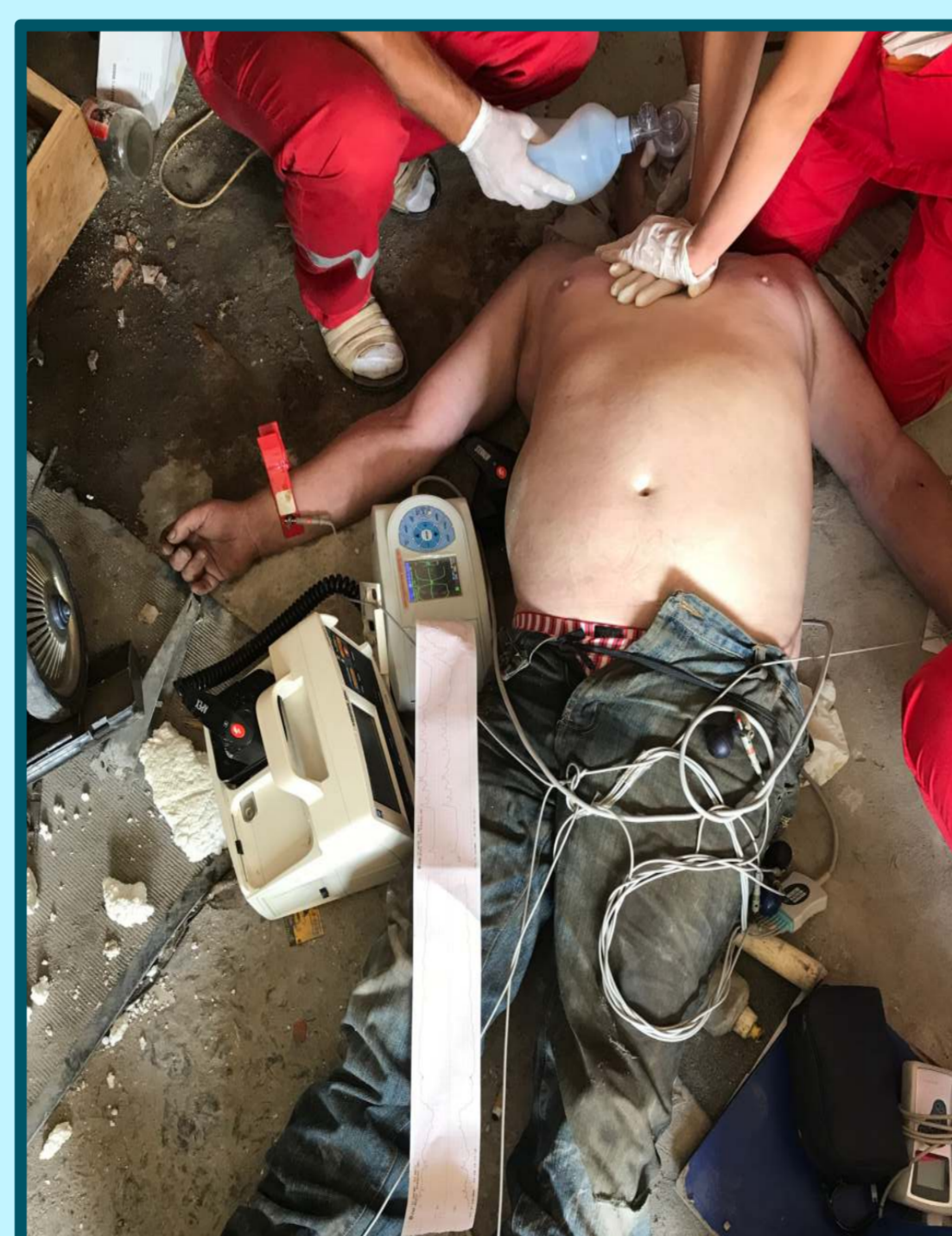- 37,000 USD total project budget
- **71 USD per observed patient encounter**

Figure 2 Observed patient encounter

INTERVENTION	TOTAL NUMBER (% correct)
DIRECT PRESSURE FOR HEMORRHAGE	35 (97%)
TOURNIQUET	2 (100%)
OROPHARYNGEAL AIRWAY	6 (67%)
ADVANCED AIRWAY	3 (100%)
OXYGEN VIA FACE MASK	29 (86%)
OXYGEN VIA NASAL CANNULA	3 (100%)
BAG-VALVE MASK	3 (33%)
VITAL SIGNS	369 (100%)
INTRAVENOUS ACCESS	132 (98%)
ELECTROCARDIOGRAPHY	156 (99%)
DEFIBRILLATOR	3 (100%)
CARDIOPULMONARY RESUSCITATION	6 (50%)
CERVICAL COLLAR	11 (100%)
SPINE BOARD	2 (100%)

Table 1 Interventions observed during 524 urgent patient encounters

DISCUSSION

FINDINGS:

- Provides an accurate assessment of **technical proficiency** of individual skills in real-world applications

- Allows identification of system-wide psychomotor training needs

- Supports use of documentation adjuncts (pictures, EKG images, video capture) to produce more complete clinical overview

CAUTIONS:

- Successful implementation requires effective planning and coordination with a commitment of time, personnel, and financial resources

- Evaluation of overall judgement and complex decision making is challenging

- Issues of patient privacy, legal implications, and observer selection and training must be considered

CONCLUSIONS

➤ Cost-effective strategy to collect **real-world observations** on the performance of **individual skills** during ambulance-based prehospital care

➤ Useful platform for identifying the current state of prehospital care delivery and evaluating compliance with established treatment protocols

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[2] Kogan JR, Hatala R, Hauer KE, Holmboe E. Guidelines: The do's, don'ts and don't knows of direct observation of clinical skills in medical education. *Perspect Med Educ*. 2017; 6(5): 286-305.

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