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Introduction

- The 2022 Russian invasion increased trauma-related civilian casualties throughout Ukraine.
- The prehospital workforce was destabilized, and local instructor availability decreased.
- Harvard Humanitarian Initiative and International Medical Corps partnered to develop and deliver in-person prehospital courses and related instructor courses in a phased approach to build a cadre of Ukrainian instructors who could scale training sustainably while maintaining quality.

Objective

- Our objective was to assess the impact of scaled international to Ukrainian led training on first responder knowledge and confidence managing trauma patients.

Methods

- The Prehospital Trauma Fundamentals (PHTF) course was delivered in three phases:
 - (1) taught exclusively by English speaking international instructors with live bidirectional interpretation,
 - (2) high-performing Ukrainian students attended Training-of-Trainers courses and were directly mentored by the international instructors while teaching portions of the courses, and
 - (3) taught exclusively by the new Ukrainian instructors.
- Knowledge change and confidence levels were assessed by pre- and post-course testing and self-assessments.
- Results from international and Ukrainian-led courses were compared to measure effectiveness.
- Data were analyzed in RStudio using McNemar’s test for paired data and Wilcoxon matched-pairs signed-rank test.
- This project was determined to not require Institutional Review Board approval by the Mass General Brigham Office of Human Research Affairs.

Host Organization & Funding

- The Ukraine Trauma Care Response Program is an academic and non-governmental organizational partnership between Harvard Humanitarian Initiative (HHI) & International Medical Corps (IMC). HHI, through its Emergency Health Systems Program, is leading a consortium consisting of Mass General Brigham, Global Medical Knowledge Alliance, and Boston Children’s Hospital.
- Grant Funding was provided by International Medical Corps.

Figure 1: Map of Course Sites



Table 2: Participant Post Course Self-Confidence Assessment Scores

| | International Led Courses n=497 (%) | Ukrainian Led Courses n=149 (%) | Sig* |
|---|---|---------------------------------------|-------|
| Participant agree or strongly agree on Likert Scale | | | |
| I feel comfortable handling patients requiring trauma care | 399 (80.3) | 125 (83.9) | 0.385 |
| I feel nervous about seeing patients with traumatic injuries | 290 (58.4) | 92 (61.7) | 0.519 |
| I feel that I lack the skills to provide care in most emergencies | 202 (40.6) | 55 (36.9) | 0.471 |
| I feel prepared to see patients with life threatening injuries | 355 (71.4) | 124 (83.2) | <0.05 |
| I feel that I understand the XABCDE of emergency care | 476 (95.8) | 136 (91.3) | 0.051 |
| I feel I have organized approach that allows me to be prepared to are for trauma patients | 442 (88.9) | 139 (93.3) | 0.163 |
| I do not feel confident in my knowledge of trauma care | 133 (26.8) | 45 (30.2) | 0.472 |
| Participants feeling confident or very confident on Likert Scale | | | |
| Emergency management of the injured adult | 403 (81.1) | 124 (83.2) | 0.639 |
| Emergency management of the injured child | 247 (49.7) | 77 (51.7) | 0.741 |
| Emergency management of blast injuries | 329 (66.2) | 111 (74.5) | 0.071 |
| Emergency management of penetrating injuries | 378 (76.1) | 128 (85.9) | <0.05 |
| Emergency management of blunt trauma | 379 (76.3) | 128 (85.9) | <0.05 |
| Emergency management of the patient with shock | 314 (63.2) | 113 (75.8) | <0.05 |
| Emergency Management of the patient with altered mental status | 257 (51.7) | 96 (64.4) | <0.05 |
| Have the skills to manage an obstructed airway | 367 (73.8) | 119 (79.9) | 0.164 |
| Have the skills to manage hemorrhage | 409 (82.3) | 133 (89.3) | 0.057 |
| Have the skills to immobilize injured patients | 399 (80.3) | 134 (89.9) | <0.05 |

*Based on McNemar's test for paired data

Table 1: Participant Demographics

| | International Led Courses | Ukrainian Led Courses |
|-------------------------|------------------------------|--------------------------|
| Gender | n(%) | n(%) |
| Male | 230 (28.0) | 123 (69.1) |
| Female | 586 (71.5) | 53 (29.8) |
| Other/prefer not to say | | |
| Missing | 4 (0.5) | 2(1.1) |
| Age (yrs) [IQR] | 37.5[26,48] | 41[32.2,50] |
| Clinical Background | | |
| Physician | 207(25.2) | 64(36.0) |
| Nurse | 385(47.0) | 27(15.2) |
| Paramedic | 31(3.8) | 2(1.1) |
| Flecher | 0(0.0) | 75(42.1) |
| Pharmacist | 0(0.0) | 1(0.6) |
| Non-healthcare worker | 138(16.8) | 2(1.1) |
| Other | 59(7.2) | 7(3.9) |

Table 3: 6-week Follow-up Survey

| | International Led Courses n=186 | Ukrainian Led Courses n=27 |
|---|---------------------------------------|----------------------------------|
| Do you feel this training has had (or will have) a life-saving effect in your management of a trauma patient? | 99.5% | 100% |
| I learned new procedures applicable to my practice | 75.3% | 85.2% |
| I now feel more confident to care for a trauma patient | 72.6% | 88.9% |
| I taught others how to perform procedures learned in this course | 60.8% | 74.1% |
| I have taught others trauma management knowledge learned in this course | 61.8% | 70.4% |
| I have performed a new skill learned in the course | 73.1% | 85.2% |
| I have used equipment that I previously didn't know how to use | 16.5% | 22.2% |

Results

- 820 participants completed international-led courses and 178 participants completed Ukrainian-led courses (Table 1).
- Both course groups had significant post-test score improvement, these rates were similar (93.6%v94.2%,p=0.9434).
- Mean pre- and post-test scores were higher in Ukrainian-led courses (52.9%v61.6% to 77.0%v81.6%,p<0.001).
- Both groups had similar reductions in skill deficit (p=0.471), nervousness (p=0.519), or lack of confidence (p=0.472).
- While confidence some management categories were similar, fewer participants in international-led courses were confident in managing shock (62.9%v77.0%,p<0.05), altered mental state (51.6%v64.7%,p<0.05), and immobilizing patients (80.0%v89.2%,p<0.05) than in the Ukrainian-led courses.

Conclusions

- Participant knowledge as measured by pre- and post-tests improved similarly in both international and Ukrainian-led courses.
 - Ukrainian-led courses had slightly higher overall test scores and confidence in some areas, suggesting improved effectiveness following the transition to Ukrainian instructors.
 - A phased transition from international to local instructors with structured mentoring can improve outcomes. This model could improve sustainable localization of prehospital training in humanitarian and other contexts.
- ### Limitations & Next Steps
- This study was completed using a novel trauma education taught only in Ukraine
 - Resource & Cultural Constraints:** Limited resources, & language and cultural barriers, may have affected the scalability and effectiveness of the training.
 - Geopolitical & Evaluation Challenges:** Ongoing conflict and a short evaluation period pose uncertainties regarding the program's long-term impact and consistent delivery.