

students and financial support during the activity at the disaster scene.

**Conclusion:** The DMAS plays a role in disaster medicine education for undergraduate medical students in the Tohoku region. The program continues to grow and faces opportunities and challenges.

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### Utilization of a Delphi Study to Determine Core Concepts for a Pediatric Residency Disaster Medicine Curriculum

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**Introduction:** As disasters increase globally in both frequency and intensity, the vulnerability of children during disasters has become obvious. Pediatricians are often left to manage the resulting physical and mental repercussions. With minimal to no disaster medicine training offered at most U.S. pediatric residencies, the need for an easily accessible pediatric disaster medicine curriculum has been exacerbated. While this need has been highlighted in the literature, material to include or methods to sustainably incorporate disaster medicine into training programs has not been established.

**Method:** From a thorough literature review, 19 topics were selected as potentially necessary to include in a disaster medicine curriculum for pediatric residents. Utilizing the Delphi method, subject matter experts were asked to rank these topics with an option to add others. Two independent surveys separated by time were administered with the goal of identifying ten critical core concepts for pediatric resident disaster medicine education. A virtual roundtable discussion then took place to finalize the ten core concepts, discuss objectives, and consider realistic methods of incorporating the curriculum into the residency timeline.

**Results:** The ten core concepts identified were 1) introduction to disaster medicine, 2) patient triage, 3) surge capability, 4) mental health effects of a disaster, 5) preparedness for children with special healthcare needs, 6) communicating personal/family disaster preparedness, 7) hospital disaster mitigation, 8) reunification, 9) drills and training, and 10) disaster ethics and crisis standards of care.

Experts agreed upon a longitudinal multi-modal approach with inclusion of short didactics, case scenarios, questions/answers, games, and links to further educational activities and opportunities focused on individualized needs.

**Conclusion:** The Delphi method was a successful approach to gathering expert consensus to establish core concepts for a pediatric resident disaster medicine curriculum.

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### Sustainability First: Evaluating a Digital Training of Trainers Approach for Lay First Responders in a Post-COVID-19 World

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**Introduction:** Road traffic injuries (RTIs) are the largest individual contributor to the global burden of injury and were among the five leading causes of global disability-adjusted life years (DALYs) in 2016. In regions with limited emergency medical services, training lay first responders (LFRs) has been shown to increase availability of prehospital care for RTIs, but sustainable mechanisms to scale these programs remain unstudied.

**Method:** Using a training of trainers (TOT) model, a six-hour LFR training program was launched in Lagos, Nigeria. The course was taught in a hybrid fashion with primary didactics over Zoom and practical in-person breakout sessions. Thirty TOTs proceeded to train 350 transportation providers as LFRs over one month. A previously validated, 23 question, pre-/post- assessment was administered digitally to assess knowledge acquisition. Participants responded to five-point Likert survey assessing instruction quality and post-course confidence.

**Results:** TOTs scored a median of 56.5% (IQR: 43.5%, 71.7%) and 91.3% (IQR: 88.0%, 95.7%) on the pre- and post-assessments, respectively, with bleeding control scores increasing most (+69.4%). Course trainees scored a median of 34.8% (IQR: 26.0%, 43.5%) and 73.9% (IQR: 65.2%, 82.6%) on the pre- and post-assessments, respectively, with airway and breathing increasing most (+48.6%). All score increases were statistically significant with  $p < 0.001$  and did not differ by trainer. Participants rated confidence 5/5 (IQR: 5,5) in first aid skills and 5/5 (IQR: 4,5) in emergency transportation, increasing from pre-course confidences of 3/5 (IQR: 3,4) and 4/5 (IQR: 3,5), respectively ( $p < 0.001$ ). Participants rated the quality of education content and TOT instructors to be 5/5 (IQR: 5,5).

**Conclusion:** This is the first time the efficacy of digital instruction for first responder trainers in LMICs has been investigated and demonstrates knowledge acquisition equivalent to that of prior in-person courses. Future work will examine the cost-effectiveness of the training of LFRs and the effect of LFRs on trauma outcomes.

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### Impact of a Simulation Game (MASS) on the Undergraduate's Experience and Performance in Triage Training—A Pilot Study

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**Introduction:** The use of simulation games in education has been rising in recent years. Triage is not only a major content among the EMS (emergency medical services) but also a necessary skill for students to improve their first-aid ability. This study aims to investigate a game for education called MASS (movement, assessment, sort, and sending), which attempts to enhance students' capability of disaster response.

**Method:** A randomized controlled trial was conducted among students who took the course: "Understanding Disaster and Surviving Risk" during the term and volunteered to participate in teaching research from different faculties in Sichuan University. Participants were trained by using the simulation game or the online course before class. The simulation game is MASS, which uses virtual reality techniques to create a realistic 3D tanker explosion scene, and the online course is a Massive Open Online Course created by the teaching team. In the class, questionnaires with subjective and objective multiple choices were carried out after a discussion. With SPSS version 27.0, statistical significance among groups was determined by Mann-Whitney U-test for rank variables, Fisher's exact test for binary variables.

**Results:** 73 students were included in this study, including 45 in the online course group and 28 in the simulation game group. The qualitative experience survey showed the two groups were significantly different in experience of disaster scene challenges, application scenes, and method of triage ( $P=0.031, 0.007, 0.031$ , respectively). Students in the simulation game group showed significantly better performance in knowledge acquisition including application scene of triage, key of the expectant's assessment, and rescue condition for thoracentesis than in the Online game group ( $P=0.048, 0.020, 0.010$ , respectively).

**Conclusion:** Simulation games can improve students' experience and performance in triage training. Due to the unrepeatability of disaster, the study suggests that games can be used to conduct simulation education for disaster medicine.

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### Outcomes of Learning and Forgetting for the Undergraduate in Disaster Medicine Education by Blended Learning During the Covid-19 Pandemic: A Prospective Cohort Study

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**Introduction:** Blended learning has been proven to support the teaching of various concepts across disciplines. This study aims to investigate the impact of the traditional blended teaching mode (self-study online and face-to-face consultation) on the undergraduate's learning of disaster skills, and compared with face-to-face consultation, explore the influence of new mode (tutoring manipulation online) on the acquisition and forgetting of knowledge in disaster medicine based on the blended learning.

**Method:** A prospective cohort study method was used. The two semesters in a school year adopted different blended teaching models for 8 weeks. In the first term, students conducted disaster theoretical knowledge before class through an Online Course created by our team. In class, teachers guided training about response and preparedness (face-to-face consultation). Due to the outbreak of Covid-19, a new training model was adopted (tutoring manipulation online) in the second term. Three knowledge tests were conducted before class, after class, and six months after the end of the term. An accuracy rate difference was defined between the second and first as correct improvement rate (CIR), and the difference between the second and third as forgetting rate (FR).

**Results:** Seventy-five students were included in the traditional group, and 64 students were included in the new group. The three results in traditional group were  $(0.38\pm 0.11)\%$ ,  $(0.65\pm 0.11)\%$ ,  $(0.56\pm 0.13)\%$ , and  $(0.49\pm 0.15)\%$ ,  $(0.71\pm 0.13)\%$ ,  $(0.60\pm 0.12)\%$  in new group. The mean scores after 6 months on both groups were lower than at the end of the term ( $P_{\text{traditional}} < 0.001$ ,  $P_{\text{new}} = 0.010$ ). The new group had a higher accuracy rate on all tests than the traditional group ( $P < 0.01$ ).

**Conclusion:** Traditional blended learning models can improve students' performance in disaster training and deepen knowledge memory. The new blended model may replace the traditional model for disaster training during the Covid-19 pandemic.

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### Scenario-Based Collaboration: Identifying the Role of the NSW Biocontainment Centre in the Response to High Consequence Infectious Diseases

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**Introduction:** The New South Wales (NSW) Biocontainment Centre (NBC) is the first high-level isolation unit in Australia. This state-wide referral facility, located at Westmead Hospital, Sydney, will provide care for patients with high-consequence infectious diseases (HCIDs), including viral hemorrhagic fevers (VHF). In preparation, a tabletop exercise with key stakeholders was held to introduce and socialize the NBC's capacity to support NSW's preparedness for the management of a patient with HCID.

**Method:** Invitations were provided to key stakeholders within Westmead Hospital (facility executive, emergency and ICU services, security, switchboard); NSW Preparedness and Response