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Developing a framework to train community in life threatening emergencies (LTEs)

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Developing a Framework to Train Community in Life Threatening Emergencies (LTEs)

by

Mirza Noor Ali Baig

An Abstract of a Project
in
Creative Studies

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

May 2021

Buffalo State
State University of New York
Department of Creative Studies

This project is a reflection of my dream:

“To Make Pakistan a Nation of Life Savers”

ABSTRACT OF PROJECT

This Masters Project is a small piece which fits into the bigger vision of my life which is to make Pakistan a nation of life savers. Inspired by my mother's death due to sudden cardiac arrest I decided to train my community in life saving skills like "CPR" and "Hemorrhage Control" so that they can help save lives by taking appropriate actions and doing immediate interventions. Knowing my passion, I was asked by a professor at my hospital to lead a project where we can develop and implement a framework to train our community in life saving skills like CPR and Hemorrhage Control. To achieve our goal we established a consortium of major stakeholders including the major hospitals, emergency medical services (EMS) and an NGO, and developed a curriculum to train 10 million Pakistani citizens in these life saving skills. Although we want to incorporate this curriculum in schools, the current pandemic has posed certain challenges like lockdowns due to which we are not able to test this curriculum with our intended population. Hence we decided to test our curriculum with the non-clinical staff from the hospitals of our consortium including the security and Human Resource (HR) staff. We have collected their valuable feedback so that we can refine our curriculum before this will become a part of the national school curriculum in Pakistan. Although it is an ongoing process, we are hopeful that once the pandemic is over we will be able to train our community in these life saving skills and make Pakistan a nation of life savers.

Keywords: Training framework, Curriculum, Community, CPR, Hemorrhage Control

May 4, 2021

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Dates of Approval:

May 4, 2021

Dr. Susan Keller-Mathers
Associate Professor

May 4, 2021

Mirza Noor Ali Baig

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DEDICATION

I dedicate this project to my wife Ayesha, my children Aizah, Moosa & Khadija and my father Masood Baig who are a constant source of unconditional love and infinite support throughout the thick and thin of my life.

ACKNOWLEDGEMENTS

I want to thank all my professors especially Sue Keller-Mathers & Gerard Puccio who facilitated my through this remarkable journey in creative studies that has changed my life all together. I also want to thank my friend Carine Chisu for guiding me and being my sounding board partner which helped me to navigate through my courses so far. Last but not the least, I am thankful to Prof. Junaid Razzak who inspired me and gave me an opportunity to lead this project which will make Pakistan a nation of life savers.

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SECTION ONE: BACKGROUND OF THE PROJECT

Purpose

The purpose of the project is to develop a framework for training community members in case of life threatening emergencies (LTEs) like sudden cardiac arrest (SCA) and massive bleeding.

Description

Hundreds and thousands of people die every year suddenly all around the world and that too without any preceding warning signs. The major burden of these "sudden deaths" is due to two major causes: sudden cardiac arrest (SCA) & massive bleeding. These deaths mainly involve younger population resulting in a significant loss of potentially active and productive years that these victims could have lived if they would have survived. Most of these events occur out of a hospital or a healthcare facility. Therefore by the time when medical help arrives, too much time has already passed and more often it's too late for these unfortunate victims to survive.

These are preventable deaths! These lives can be saved if appropriate and timely actions are taken by the bystanders or community members who are present at the site of incident.

Developed countries have well established healthcare models, which empower their community through trained first responders to intervene in these situations and help

save lives. Certain communities like in Seattle Washington, Denmark, Belgium, Singapore, Korea & China have successfully implemented these strategies in improving the survival rate of these victims especially of those with SCA.

Unfortunately a multicentre study (Mawani et al, 2013) showed that the survival rate of SCA victims in Karachi, Pakistan is 0%. This was probably because, actions that could have helped to save lives of these victims were not been taken at the site of incident due to lack of awareness and/or training of the community about how to respond in these life threatening emergencies (LTEs).

Inspired by mother's death which was due to the sudden cardiac arrest, I aim to develop a framework for training my community in Pakistan in life threatening emergencies (LTEs) especially SCA & massive bleeding. I am planning to sustain a consortium of major stakeholders including healthcare institutes through partnerships that will work together to train our community in dealing with life threatening emergencies (LTEs).

For this purpose I will utilize the creative process through the creative tool set using skills like breakthrough and expand the boundaries, being flexible, be aware of emotions and put ideas into context. As this project takes on a big challenge of building a framework for LTEs where the survival rate is negligible I will utilize the CPS process including clarification, ideation, development and implementation in phases like team building, execution and sustainability.

Rationale

My mother's sudden demise is a source of intrinsic motivation behind my project. The vision of my personal and professional life is to train my community in these life saving skills so that more of these lives can be saved by timely interventions and actions. Once established, this framework will hopefully improve the response and actions of the community members towards LTEs and help save lives of these victims and serve to solve a major public health problem in my country.

SECTION TWO: PERTINENT LITERATURE

To achieve the purpose of my project I reviewed the pertinent literature as per these themes: (1) Burden of disease for sudden cardiac arrest & massive bleeding (2) Survival of victims with sudden cardiac arrest & massive bleeding (3) Existing community based systems to improve the survival rates of victims of sudden cardiac arrest & massive bleeding and (4) Creative Problem Solving for complex challenges/problems. My literature search is reflected through few of the sources mentioned below out of a thorough search process that I performed for the project

Haagsma, J. A., Graetz, N., Bolliger, I., Naghavi, M., Higashi, H., Mullany, E. C., Abera, S. F., Abraham, J. P., Adofo, K., Alsharif, U., Ameh, E. A., Ammar, W., Antonio, C. A., Barrero, L. H., Bekele, T., Bose, D., Brazinova, A., Catalá-López, F., Dandona, L., Dandona, R., … Vos, T. (2016). The global burden of injury: incidence, mortality, disability-adjusted life years and time trends from the Global Burden of Disease study 2013. *Injury Prevention : Journal of the International Society for Child and Adolescent Injury Prevention*, *22*(1), 3–18. https://doi.org/10.1136/injuryprev-2015-041616

The authors published the data on the global burden of injury and have highlighted that trauma is leading cause of death in young adults and results in more years of life lost than any of the chronic diseases like stroke and heart diseases.

Hyder, A. A., He, S., Zafar, W., Mir, M. U., & Razzak, J. A. (2017). One hundred injured patients a day: multicenter emergency room surveillance of trauma in Pakistan. *Public Health*, *148*, 88–95. https://doi.org/10.1016/j.puhe.2017.03.006

Hyder et al. conducted this large scale surveillance study in the major urban based emergency departments in Pakistan to determine the burden of injury & trauma in Pakistan. The study collected data from more than 68,000 patients and the majority of the patients suffered un-intentional injuries including road traffic accidents, predominantly comprising of young population.

Mawani, M., Kadir, M. M., Azam, I., Mehmood, A., McNally, B., Stevens, K., Nuruddin, R., Ishaq, M., & Razzak, J. A. (2016). Epidemiology and outcomes of out-of-hospital cardiac arrest in a developing country-a multicenter cohort study. *BMC Emergency Medicine*, *16*(1), 28. https://doi.org/10.1186/s12873-016-0093-2

Mawani et al. collected the data from 310 patients with out of hospital cardiac arrest (sudden cardiac arrest) from 05 major hospitals in Karachi, Pakistan. The results showed that the survival was null in these patients. This was due to lack of appropriate actions from the community (bystander CPR)which can help to save lives of these victims and weak emergency medical services that led to a delayed transfer of these patients to the hospital.

Mawani, M., Azam, I., Kadir, M. M., Samad, Z., & Razzak, J. A. (2020). Estimation of the burden of out-of-hospital traumatic cardiac arrest in Karachi, Pakistan, using a cross-sectional capture-recapture analysis. *International Journal of Emergency Medicine*, *13*(1), 26. https://doi.org/10.1186/s12245-020-00283-z

Mawani et al. conducted this study to determine the burden of out of hospital cardiac arrest (sudden cardiac arrest) due to trauma in Karachi, Pakistan. They collected data from more than 1000 victims of trauma who couldn't survive because of cardiac arrest and concluded that the incidence was 45.7/100,000 population. Out of these victims more than 80% were young adults (age < 44 years).

Razzak, J. A., Mawani, M., Azam, I., Robinson, C., Talib, U., & Kadir, M. M. (2018). Burden of out-of-hospital cardiac arrest in Karachi, Pakistan: Estimation through the capture-recapture method. *JPMA. The Journal of the Pakistan Medical Association*, *68*(7), 990–993.

Razzak et al. in their study published the burden of out of hospital cardiac arrest (sudden cardiac arrest) in Karachi, Pakistan which was significant and was high as compared to some of the high income countries. This was probably due to a weak healthcare system and resulted in a higher number of preventable deaths.

Smith JE, Rickard A, Wise D. Traumatic cardiac arrest. J R Soc Med. 2015 Jan;108(1):11-6. doi: 10.1177/0141076814560837. PMID: 25572990; PMCID: PMC4291327.

Smith et al. in their article highlighted the fact that if standard SOPs are practiced, the outcome of victims with traumatic cardiac arrest can be improved.

Wissenberg, M., Lippert, F. K., Folke, F., Weeke, P., Hansen, C. M., Christensen, E. F., Jans, H., Hansen, P. A., Lang-Jensen, T., Olesen, J. B., Lindhardsen, J., Fosbol, E. L., Nielsen, S. L., Gislason, G. H., Kober, L., & Torp-Pedersen, C. (2013). Association of national initiatives to improve cardiac arrest management with rates of bystander intervention and patient survival after out-of-hospital cardiac arrest. *JAMA*, *310*(13), 1377–1384. https://doi.org/10.1001/jama.2013.278483

Wissenberg et al. in their article reviewed several national initiatives in Denmark to improve bystander and advanced care for the patients of out of hospital cardiac arrest & determine their association with the survival of these patients. These initiatives included : (1) mandatory resuscitation training in elementary schools & for driving license (2) Free distribution of self-instruction CPR training kits (3) Improving telephone guidance from the emergency dispatch center to bystanders near the cardiac arrest victim (4) Increase in automated external defibrillators (AEDs) outside the hospitals and (5) Improving

advanced care through updates in clinical guidelines. There was an increase in survival rates in patients with out of hospital cardiac arrest victims in Denmark during 10 years following these interventions. The authors concluded that between 2001 and 2010, an increase in survival following out-of-hospital cardiac arrest was significantly associated with a concomitant increase in bystander CPR.

Kim, T. H., Lee, Y. J., Lee, E. J., Ro, Y. S., Lee, K., Lee, H., Jang, D. B., Song, K. J., Shin, S. D., Myklebust, H., & Birkenes, T. S. (2018). Comparison of Cardiopulmonary Resuscitation Quality Between Standard Versus Telephone-Basic Life Support Training Program in Middle-Aged and Elderly Housewives: A Randomized Simulation Study. *Simulation in Healthcare : Journal of the Society for Simulation in Healthcare*, *13*(1), 27–32. https://doi.org/10.1097/SIH.0000000000000286

The authors in their study compared different training methods used to save life of an out of hospital cardiac arrest victim. A group of laypersons trained in Telephone- Basic Life Support (T-BLS) was compared with those who were trained in conventional Basic Life Support (S-BLS). The authors concluded that those who were trained in T-CPR performed better as compared to those trained in S-BLS.

Parnes, S. (Ed.). (1992). Sourcebook for creative problem solving. Hadley, MA: Creative Education Foundation Press.

With the literature search from sources mentioned above and taking help from the relevant stakeholders will help me to strengthen the plan and implement the action items to achieve my purpose of developing a framework to train my community members to take appropriate actions in case of life threatening emergencies

SECTION THREE: PROCESS PLAN

Plan to Achieve Goals & Outcomes

To achieve the purpose of my project, it is extremely important that sufficient time must be spent into exquisite planning so that the is minimum distraction during the execution or implementation phase. Therefore, I decided to break my plan into smaller block items as mentioned below:

1. Developing a sustainable consortium of stake holders:

A consortium of major stakeholders including the healthcare institutes with similar area of interest (community training in LTEs) will be developed.

2. Building a consensus around the strategic objectives:

Strategic objectives will be shared and finalized with the partners (members) after developing a consensus through frequent meetings.

3. Developing the LTEs training framework:

A framework will be developed for the LTEs training for the community.

4. Pilot test of the framework:

Pilot testing will be done of the LTEs training framework.

5. Laying out a plan for the implementation of the framework:

A final plan will be developed for the implementation of the LTEs training framework.

Project Timeline

Task	Timeline	Approx. no. of hours/month
Identification of stakeholders	Completed	-
Developing a consortium	Completed	-
Sustaining the consortium (via meetings)	February – March 2021	3-4
Finalization of strategic objectives	February 2021	3-4
Developing the LTEs framework	February 2021	6-8
Pilot testing the framework	February – March 2021	6 - 12
Laying out the final implementation plan	April – May 2021	8 -10

Evaluation Plan

The outcomes that I foresee which will be evaluated for my project will be the process of building and sustaining partnerships within the consortium. The main steps in the outcome consist of my role and contribution in the consortium. Every task in the final plan is based on our partnership working well and the outcomes from developing the framework to its pilot testing are based on effective group work. I see myself utilizing the CPS process to play as a catalyst within the group. I believe that the evaluation plan will evolve as the project goes forward.

SECTION FOUR: OUTCOMES

My dream of saving lives of victims of life threatening emergencies like out of hospital cardiac arrest (OHCA) was never a secret. Since 2016, with the help of my family, friends, medical students and postgraduate trainees I was able to conduct several CPR awareness and training sessions for the community. These sessions were conducted in different cohorts of my community including schools, colleges, universities, offices and family gatherings. I was fortunate to publish a change of shift article "Resuscitation Can Save Lives. Training the public" in the Annals of Emergency Medicine which revolved around the story of mother to inspire the community to learn CPR.

Considering my interest and passion I was fortunate to be approached by Professor Junaid Razzak the current Director of the Centre of Excellence in Trauma and Emergencies at my hospital (the Aga Khan University Hospital) to lead a program which is focused on training our community in life saving skills of CPR and Hemorrhage Control. I saw this as an opportunity to channelize my energy to fulfill my dream of improving the survival of out of hospital cardiac arrest victims and accepted the offer.

As I was leading the program before the start of my masters' project, some work had already been done before the start of the semester. As the main goal of my project was to develop a training framework for life threatening emergencies for my community, the block items to achieve the goal were: (1) to build a consortium of major stakeholders (2) to develop a curriculum for the community members that can train them in the life saving skills of CPR and life threatening bleeding and (3) to pilot test the curriculum with the intended audience. The three outcomes are described in detail in this section.

Development of a Consortium

The vision of developing a training framework for life threatening emergencies that can train the community members was almost impossible without the involvement of major stakeholders. To begin with, a vision and a mission statement was formulated followed by the development of a hierarchical structure for the consortium which included an advisory board and the general secretariat including the focal persons from each member of the consortium who will participate on a regular basis to track the progress of the programme. To summarize, the vision of the consortium is to make Pakistan a nation of life savers by training ten million citizens in the life saving skills of CPR and Hemorrhage Control.

The concept was floated between the stakeholders and an invitation was sent to them to become a part of the consortium. 10 stakeholders agreed to join the consortium by signing a memorandum of understanding (MOU) (Appendix A). The stakeholders were a blend of national and international partners including the major tertiary care hospitals in the Sindh & Punjab provinces of Pakistan, an ambulance service which is the largest ambulance service in Pakistan, a major emergency medical service (EMS) a student run NGO and an international partner (The American College of Emergency Physicians). Later two more stakeholders including a national Heart Hospital and the Resuscitation Academy Foundation based in Seattle, USA became the member of the consortium by signing the MOU. The term of reference (TORs) for the consortium were set and agreed by all the members including a monthly meet up to track the progress of the programme.

Although the establishment of the consortium was a success, its sustainability is an ongoing challenge. But I am proud to say that despite several challenges including those posed by the current pandemic the consortium was not only able to sustain but also make some progress in terms of the development and pilot testing of the training curriculum.

Development of a Training Curriculum

The intended audience for the initial phase of the programme are Pakistani school children from grade 08 to 11 (age 13 years- 17 years) and their teachers. As a part of the MOU, every member of the consortium agreed to provide 50 master trainers to train the school teachers in life saving skills of CPR and Hemorrhage control. Later these teachers will train the school children in these life saving skills.

Considering the above framework, separate training curricula were developed for the participants (students and teachers) and for the master trainers (Appendix B). The curriculum for the participants included a didactic session comprising of video based learning followed by a hands on practice session which will help them to develop their psychomotor skills. The curriculum focuses on developing the skills among the participants which can help to save lives of victims of out of hospital cardiac arrest and life threatening bleeding. These skills include how to respond appropriately in case of a life threatening emergency, commencement of CPR and Hemorrhage control maneuvers till medical help arrives while keeping themselves safe particularly in the times of COVID-19.

The master training curriculum focuses on the preparation teaching and evaluation component of the participants. Both the curricula were reviewed by the external and internal reviewers which included the subject experts and educationists. The curricula were refined and improved after receiving thorough feedback from the reviewers.

As we worked on the development of the curriculum, the leadership of the program also approached the federal government to incorporate these training courses in the national curriculum of schools and make these trainings mandatory to make the program sustainable. As an initial success the federal government has recommended their education committee to incorporate the training curriculum for life threatening emergencies in the national curriculum of schools in Pakistan from 2022. As things progress on the government front the consortium continues to work to improve and refine the training content by connecting with several experts including researchers, educationists and clinicians before it becomes a part of the national curriculum.

Pilot Testing of the Training Curriculum

After the development of the training curriculum we needed to start the pilot testing to identify the weak links and improve them before the final version. COVID-19 posed several challenges and one of them was the closure of schools. This was a major setback for our program as we were not being able to connect with them being the target audience.

Despite connecting with the leadership of certain schools and their willingness to participate, we were not able to approach the school children or their teachers due to the school closures. Hence we decided to adopt an alternate plan for the pilot testing and we

started to conduct the training sessions within the institutions of the consortium members. Till now approximately 10 pilot training sessions have been conducted under strict COVID-19 SOPs.

It's a three hour duration course. The target audience included a mixture of healthcare workers and non clinical staff including the administrative staff, the Human Resource (HR) staff, technicians, porters and security guards (Appendix C). These sessions included a pre and post-test questionnaires, and the skills were evaluated through a checklist. A feedback was collected after each of the pilot session which helped us to refine the course further especially in terms of the content delivery and time management.

While we wait for the pandemic to end these sessions proved to be really helpful for us in terms of identifying the gaps and rectify them before the program is launched in schools and we come closer to make our dream come true.

SECTION FIVE: KEY LEARNINGS

During this journey as we enjoyed success on our way, there were also some challenges which provided us valuable experience and proved to be our key learnings. The learnings through our journey are categorized as per every outcome and are described in detail in this section.

Development of a Consortium

1. We learned that the task of establishing a consortium is more than the signing of an MOU. It required a close follow up with all the partners including one to one meetings with each of them to understand their needs and expectations from the program.
2. We learned the importance of working together as a team, despite the urge which almost every partner felt to lead the program on their own. During our journey every partner identified this urge and was successful in overcoming this challenge and putting the value of the teamwork above all.
3. During this journey we also realised the value of being a good listener. Being leaders in the field it's always easy to put our statements first but the consortium helped us to be a good listener and value each other’s suggestions and ideas for the program.
4. Being flexible is one of the creative skills. The experience of being in a consortium allowed us to utilise this skill to its maximum as we had to be flexible in several situations whether it be the monthly meetings or timelines for the completion of certain tasks.

5. There were times when all of us had to show the potential to tolerate the ambiguity in certain challenging situations. It was easy for the frustration to make its way when there were no clear answers or solutions. Being in the middle of a pandemic gave origin to several situations where we were unsure about how to sustain the consortium especially when there were so many other things to think about. Luckily all of the partners stayed strong enough during these challenging times and came up with several ideas including virtual and hybrid sessions and frequent online meetings to work our way through and to stay focus on our objectives.
6. A couple of our members are based in another province and they perceived that they were not involved as much as the rest of the group and felt left out at times. Although this is still a challenge but having frequent one to one meetings with these partners and engaging them through extra sessions certainly helped to fill this vacuum.

Development of a Training Curriculum

1. We reviewed some of the successful programmes around the world which focused on community training in learning life saving skills. Although these programmes inspired us to follow their curriculum but we learned that not everything in those curricula was relevant to our local context, sometimes due to the lack of resources and at times because of the difference in existing systems. After several rounds of discussion with our partners and international experts we tailored our curriculum

as per our own needs. For example automated external defibrillators (AEDs) in case of a cardiac arrest and a commercial tourniquet in case of a life threatening bleeding are easily available and used in some of the developed countries like the United States but are not available in Pakistan, hence we removed these from our curriculum and focused on the skills that can be easily implemented in our region to help save lives.

2. COVID-19 posed several challenges including the development of a curriculum that can be delivered during the pandemic. Several ideas were floated including an idea of an online curriculum or a hybrid model that can be delivered while having minimal or no risk of acquiring the infection. During this journey of designing the curriculum we realised that having an online or a hybrid curriculum was not feasible as per our setting considering the lack of resources or technology at some cohorts of our community. We learned that the conventional face to face method of teaching while observing strict precautions is more convenient for our population. Hence the curriculum was designed accordingly.
3. As the curriculum was developed there was also a need for its validation. We approached both the external and internal reviewers to give feedback on the curriculum. We realised that we need to be flexible while awaiting the response and feedback of the reviewers as per their availability and convenience. Although we received the feedback from some of the reviewers but we had to wait for a complete and thorough feedback from the rest of the group. This highlighted the importance of being flexible, at the same time being aware of the timelines that

we had to follow so that we can test the curriculum with our intended audience. While we waited for their response, we decided to start the pilot testing of our curriculum so that we can identify gaps and rectify them accordingly so that we don't lose any time when it comes to the final implementation of the curriculum in schools.

4. During the development of the curriculum we realised that it is extremely important not to assume anything on part of others whether it be our consortium members. There were situations where we mistakenly assumed that the consortium members are clear about the content delivery of the curriculum. But during our qualitative sessions we identified several areas which needed further clarification. Therefore it was important to keep our consortium members in loop throughout the process and to clarify any misconceptions. This strategy probably saved us from consuming extra time and energy during the later phase of the implementation of the program.

Pilot Testing of the Curriculum

1. Although the intended population of the curriculum were the school children and teachers but the biggest barrier that we faced was to connect with them due to the school closures because of COVID-19. Therefore we had to change our strategy to test our curriculum and we decided to conduct pilot sessions within the institutes of our consortium members. Though they were not the ideal population but we received some valuable feedback from the participants

that allowed us to effectively troubleshoot the problems that came to surface during these training sessions.

2. We learned that it was important for us to implement the pilot testing of the curriculum instead of waiting and clarifying the way forward because of the pandemic. This allowed us to not only identify the gaps in the curriculum but also refined the skills of the master trainers in terms of content delivery and facilitation.
3. We learned that approaching the target audience for pilot testing of the curriculum also required a comprehensive strategy with a predefined schedule as it's not always easy to find the participants especially during the times of COVID-19. Hence we decided to formulate a yearly calendar for trainings that will be conducted both within the consortium institutes and later in schools.
4. During these pilot sessions we also realised that it’s not only important to monitor the quality of training of the participants but also to monitor the quality of the master trainers. Hence we started to develop a monitoring and evaluation framework for both the participants and master trainers to ensure the quality of trainings.
5. We also learned the importance of an effective marketing and communication strategy during our pilot sessions. It’s not only important to have an effective communication strategy but also to have a better marketing plan that will help to spread awareness among the masses and may also capture an audience that can benefit from the program.

SECTION SIX: CONCLUSION

The journey of developing the framework for training community members in life threatening emergencies was a rich experience in itself as we learned a lot during the whole process. Despite the pandemic we were successful in achieving our objectives of sustaining the consortium, development of a curriculum which is locally relevant and commencement of pilot testing sessions.

While reflecting on the whole process I realized that we utilized certain creative skills to overcome the challenges and barriers. The skills that we utilized included divergent thinking, being flexible, being aware of emotions and tolerance for ambiguity. As stated earlier that we had to be flexible and be aware of emotions while working with other members of the group not only to bring sustainability to the consortium but also to keep us focused on our vision to make Pakistan a nation of life savers. Similarly we had to show tolerance for ambiguity and tap divergent thinking to solve complex problems posed by the pandemic during the development and pilot testing of the curriculum.

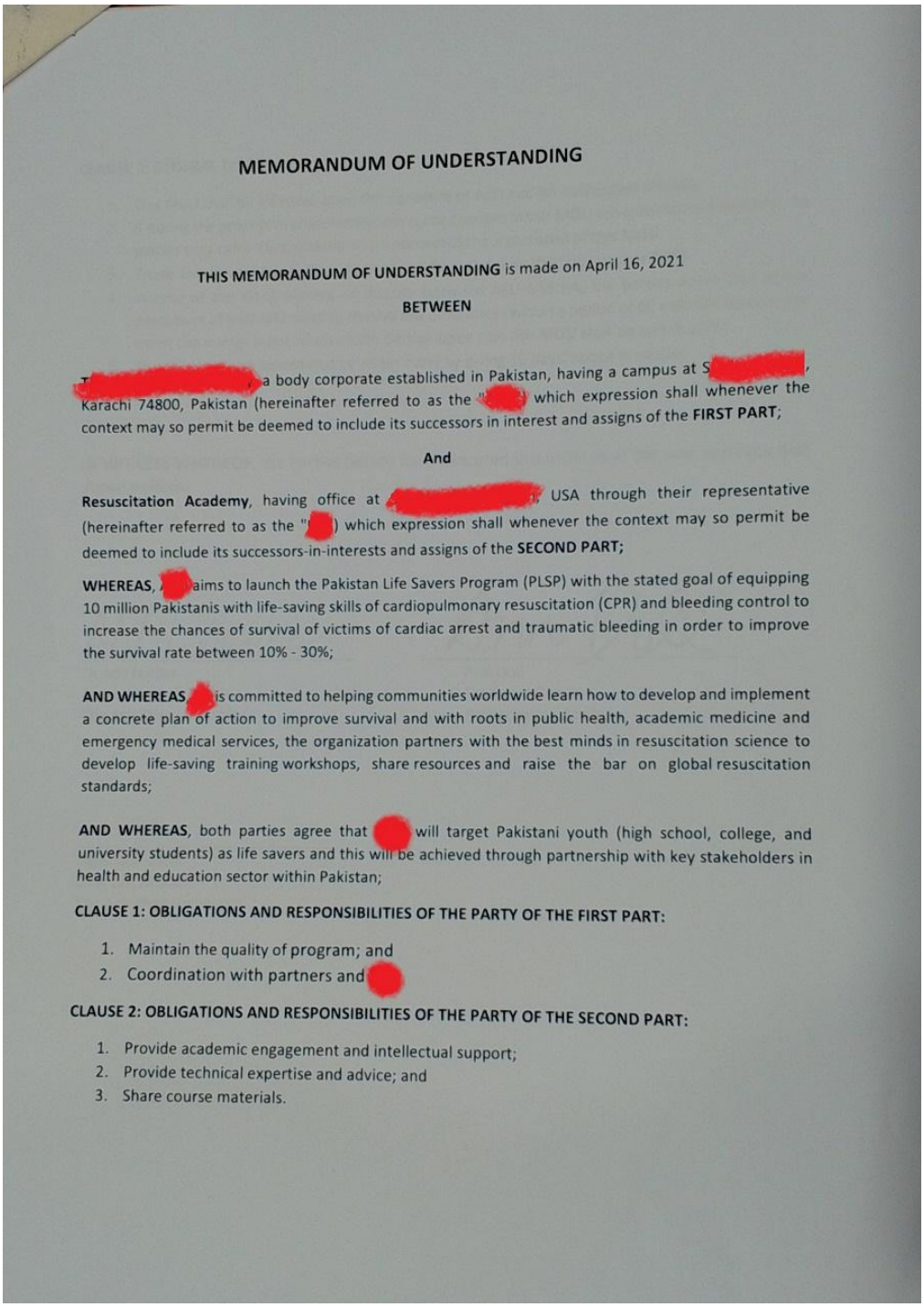
Although the vision of the programme is huge and it will take some time and effort to train 10 million citizens in the life saving skills of CPR and Hemorrhage control, I am extremely delighted by the progress of the program and having an opportunity to document it through my masters project as it provided me an insight about the value of creative skills. In the near future I see myself utilizing more of these creative skills to benefit this program in terms of overcoming the barriers and challenges in making Pakistan a nation of life savers.

REFERENCE

Mawani, M., Kadir, M. M., Azam, I., Mehmood, A., McNally, B., Stevens, K., Nuruddin, R., Ishaq, M., & Razzak, J. A. (2016). Epidemiology and outcomes of out-of-hospital cardiac arrest in a developing country-a multicenter cohort study. *BMC Emergency Medicine*, *16*(1), 28.

APPENDIX A

MEMORANDUM OF UNDERSTANDING



MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING is made on April 16, 2021

BETWEEN

[redacted], a body corporate established in Pakistan, having a campus at [redacted], Karachi 74800, Pakistan (hereinafter referred to as the "[redacted]" which expression shall whenever the context may so permit be deemed to include its successors in interest and assigns of the **FIRST PART**;

And

Resuscitation Academy, having office at [redacted], USA through their representative (hereinafter referred to as the "[redacted]") which expression shall whenever the context may so permit be deemed to include its successors-in-interests and assigns of the **SECOND PART;**

WHEREAS, [redacted] aims to launch the Pakistan Life Savers Program (PLSP) with the stated goal of equipping 10 million Pakistanis with life-saving skills of cardiopulmonary resuscitation (CPR) and bleeding control to increase the chances of survival of victims of cardiac arrest and traumatic bleeding in order to improve the survival rate between 10% - 30%;

AND WHEREAS, [redacted] is committed to helping communities worldwide learn how to develop and implement a concrete plan of action to improve survival and with roots in public health, academic medicine and emergency medical services, the organization partners with the best minds in resuscitation science to develop life-saving training workshops, share resources and raise the bar on global resuscitation standards;

AND WHEREAS, both parties agree that [redacted] will target Pakistani youth (high school, college, and university students) as life savers and this will be achieved through partnership with key stakeholders in health and education sector within Pakistan;

CLAUSE 1: OBLIGATIONS AND RESPONSIBILITIES OF THE PARTY OF THE FIRST PART:

1. Maintain the quality of program; and
2. Coordination with partners and [redacted]

CLAUSE 2: OBLIGATIONS AND RESPONSIBILITIES OF THE PARTY OF THE SECOND PART:

1. Provide academic engagement and intellectual support;
2. Provide technical expertise and advice; and
3. Share course materials.

CLAUSE 3: GENERAL TERMS

1. This MoU shall be effective upon the signature of [redacted] and [redacted] authorized officials.
2. If during the process of implementation, some changes in this MOU are considered necessary, the parties may carry out the same with approval of the signatories of this MOU.
3. These arrangements are made for a period from October 2020 till October 2022.
4. In case of any disagreement or dispute between [redacted] and [redacted] the parties agree that senior executives of both will meet to resolve any differences within a period of 60 calendar days. In the event the matter is not resolved the parties agree that this MOU shall be terminated.
5. This MOU may be terminated by either party by giving 30 days' notice in writing.

IN WITNESS WHEREOF, the Parties hereto have executed this MOU as of the year and date first above written.

[redacted]

Iqbal Sadruddin
Director, Finance
The Aga Khan University

APPENDIX B

THE CURRICULUM

2020

PAKISTAN LIFESAVERS PROGRAM (PLSP)

A NATIONAL MOVEMENT TO SAVE LIVES AND EMPOWER PAKISTANI CITIZENS

Provider Training Curriculum

Provider Training Curriculum

CONTENTS

INTRODUCTION

Need Assessment:

Deaths from Sudden Cardiac Arrest (SCA) and severe bleeding after injury continue to be a major global public health issue. In case of cardiac arrest, every 1 minute without CPR decreases the chance of survival by 10% (1). Similarly, those with severe bleeding can lose their lives if steps are not taken to stop the bleeding. Decreasing the response time to medical emergencies is therefore crucial for patient survival and optimum outcomes.

Many lives can be saved if family, friends, or bystanders intervene in the first few minutes of cardiac arrest and injury. The two skills required to save a life – CPR and bleeding control – are easy to master for non-healthcare professionals and simple to teach. As a public health problem that is being faced throughout the nation, Pakistan LifeSavers Program (PLSP) is a national movement and an initiative taken up by many national and international organizations to train laymen in these life-saving skills to increase the rate of bystander response and overall survival. These organizations include Aga Khan University, Dow University of Health Sciences, Jinnah Post Graduate Medical Centre, Ziauddin University, Shaheed Mohtarma Benazir Bhutto Trauma Centre, Aman Foundation, Edhi Foundation, Rescue 1122, Mukhtar A Sheikh Hospital, Tabba Heart Institute and National Institute of Cardiovascular Diseases.

Vision: To develop a nation of empowered citizens & youth with the skills to save lives.

Mission Statement:

PLSP is a youth skill-building and empowerment program that will train 10 million people in CPR and hemorrhage control. PLSP will also

1. Deliver **evidence-based programs** in life-saving skills.
2. Develop a **network of lifesavers**, with a focus on the government's largest workforce of teachers, and the large youth population of Pakistan.
3. Establish a **consortium of local and international partners** to create impact at scale.
4. Be **a model for interdisciplinary approaches** to development challenges.

Goals: The main goal of PLSP is to create a **national movement** by mobilizing the citizens of Pakistan and enabling them to become a trained **By-stander Lifesaver**. It will improve survival from out-of-hospital cardiac arrest and traumatic bleeding by ensuring early life saving interventions. It will also:

1. Contribute towards a **decrease in preventable deaths.**
2. Serve as a **model for health skills development in trauma and emergency** for the developing world.
3. Contribute in generation of **new knowledge in the area of cardiac arrest & life threatening bleeding.**
4. Engagement of **youth and school program** in learning CPR and bleeding control skills.

Course Objectives

PLSP Provider:

As a PLSP Provider the trainee will be able to:

- Ensure their own safety while responding to an emergency situation, along with safety of the victim – *Scene Safety*
- Determine a victim's response and level of consciousness – *Check for Response*
- Effectively communicate with ambulance services and other responders on sight with focus and clarity – *Call for help*
- Perform high performance chest compressions in case of cardiac arrest - *CPR*
- Stop a victim from potentially bleeding to death, in case of severe bleeding – *Stop the bleeding*
- Practice preventive measures to stay safe from COVID19 – *COVID Safety.*

PROGRAM STRUCTURE

Duration:

- Three (03) hours

Eligibility Criteria:

- Trainee should be enrolled in school and registered as students of classes 8-11.

Number of Participants:

- 4 - 6 participants per Trainer for Hands on Training.
- 20 – 30 participants per session

Program Agenda:

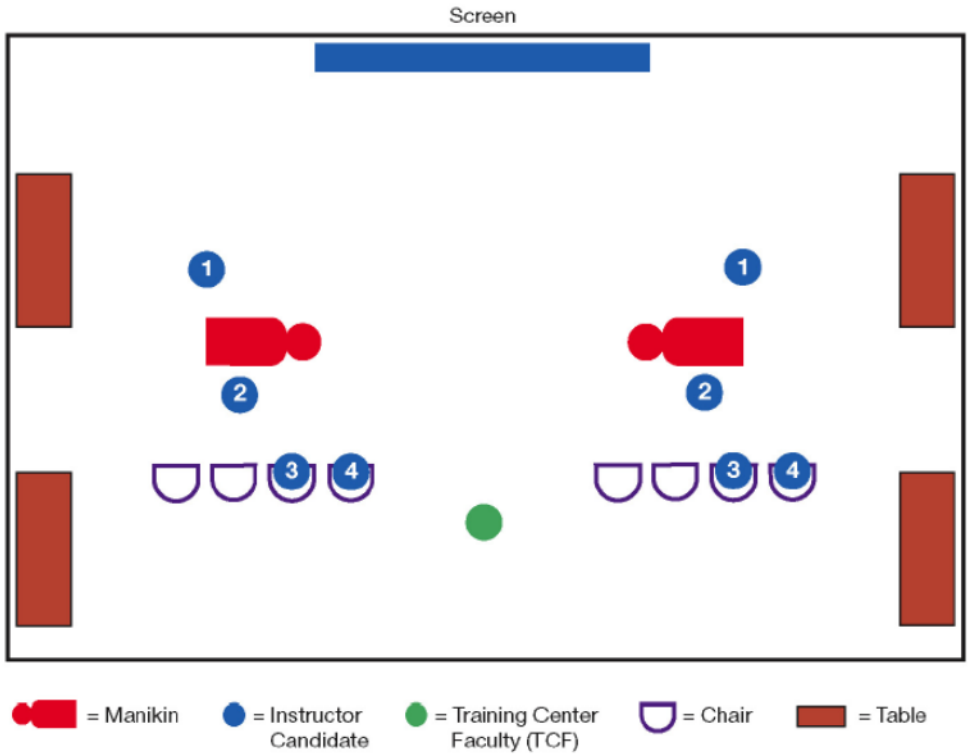
1. Classroom Session (1 hour)
    A. Registration
    B. Introduction to team and PLSP
    C. Pre-test
    D. Didactic session (PLSP Training video with debriefing)
2. Hands on Session (1.5 hour)
3. Post Test (15 mins)
4. Feedback and Evaluation (15 mins)

Program Logistics:

1. A training space (e.g.: classroom)
2. CPR manikin or alternative
3. Stop the Bleed manikin or alternative
4. Alcohol wipes (during Covid 19)
5. Disposable gloves (during Covid 19)

6. Masks (during Covid 19)
7. Stationary
8. Photocopies of pretest, posttest, attendance sheet, feedback form

PLSP Classroom* Arrangements:



*Reference: American Heart Association (AHA): Use this as a reference and modify according to your classroom setting and space.

TEACHING METHODOLOGY

Teaching methods are both didactic (training video and presentation slides) as well as interactive (through hands on session)

Program Content:

	Content	Content Details	Teaching Format	Learning objectives	Questions To Be Asked from Students	Time (Mins)
1	**PLSP Introduction**	Mission and Vision of PLSP	Presentation slides	Know the mission of PLSP	• What do you think about the program? • What do you anticipate is your role here?	5 min
PLSP Training Video						
1	**Stay Safe**	Safety: • Self and Environment • Your safety first	Video and demonstration through hand prompts	Demonstrate focus on keeping him/herself safe and the safety of the victim	• Why is safety important? • What would you do if the scene is not safe?	5 mins
Debriefing Session: Safety & Communication (The trainer will demonstrate and debrief the Safety and Communication content)						**5 mins**
2	**Check for Response**	Shake and shout: • Check for Response • Check for Breathing	Video and hands-on	Be able to identify cardiac arrest by: • Checking for response • Recognizing absent or abnormal breathing	• How do you asses the consciousness of a patient? • How do you assess if the patient is breathing normally?	5 mins
3	**Call for help**	Ambulance numbers: • Give according to geographical location Communicating with ambulance dispatch services • First Inform about location (where you calling from?) • Second, your current contact details. • Third, answer the dispatcher questions.	Video	Demonstrate ability to communicate with ambulance services with clarity and focus.	What is the essential information you should be able to communicate with Ambulance services?	5 mins

4	**Hands Only CPR**	Position • Victim & provider position • Hands placement Depth of compressions • Approx. 5-6 cm (2 inches) Rate of compressions • 100-120 compressions /min. Chest recoil Switch roles after p2 minutes Minimal interruptions When to stop CPR	Video	• Proper position of the victim and the provider • Know the CPR position mechanics • Perform effective chest compressions • Demonstrate the compression depth and frequency • Know when to stop CC	• Hands on demonstration by the trainer and questions will be discussed in provider hands on practice session. • How often should you switch roles with other providers/bystanders? • What is the maximum time interval for an interruption during CPR?	10 mins
Debriefing Session: Hands Only CPR (The trainer will demonstrate and debrief the Hands Only CPR content)						**5 mins**
5	**Stop the Bleed**	• How to apply direct pressure? • How to do wound packing?	Video	• Demonstrate use of direct compression and compression dressing to stop life threatening bleeding	Hands on demonstration by the trainer and questions will be discussed in provider hands on practice session.	10 mins
Debriefing Session: Bleeding Control (The trainer will demonstrate Bleeding Control content)						**5 mins**
6	**COVID Safety**	• Face masks • Hand washing	Video	Demonstrate measures to keep self and victim safe from COVID	How can you take care of your safety in an emergency situation? What are the resources you can use	5 mins
Debriefing Session: COVID-19 Safety						**5 mins**
Hands on Practice (Divide participants intro groups)						**90 minutes**

EVALUATION & ASSESSMENT

PLSP Provider Evaluation:

- **Formative Assessment of Providers**

  The Provider will be evaluated by the Trainer through the following:
  1. In-classroom Q/A
  2. Individual scenario-based hands-on

- **Summative Assessment of Providers**

  Participants will be evaluated through pre-test and post-test knowledge (assessment) and a checklist for skill stations (Annexure A1 & A2)
  - The passing criteria for providers will be to pass the skill stations only.

- 100 % score will be required to pass the skill stations and get the certification.
- The PLSP knowledge evaluation will be done by pre-define pre and post-test.
- Pre & posttest will be utilized for quality assessment and improvement.

- **PLSP Provider Certification of Completion:**

  - All providers will need to successfully complete the assessment process (knowledge assessment and skill stations).
  - The providers will have an option to retake the skill stations in case of an unsuccessful attempt (same day).
  - In case of 02 unsuccessful attempts the participants will be asked to take the course again
  - The remedial time will be given to the participants according to next upcoming session.

- **PLSP Provider Feedback:**
  - After completion of the program, PLSP provider will evaluate the PLSP program by sharing his or her experience on a predesigned feedback form (Annexure B).

Frequently Asked Questions:

This section is meant to cover the queries that first-time participants may have for the Trainer. Please note that this is not an exhaustive list and we encourage you to reach out to the Master Trainers in case you are asked a question you are unsure about.

1. ***What help can I still give a victim if the situation is not safe enough for me to respond and attend to them physically?***
    - After you have ensured your own safety and moved to a secure location, call the ambulance as soon as possible. Give the details of the victim (Age, address and problem). The ambulance services will be able to reach them and also guide you to calling other services as needed (i.e. police).
2. ***Why do ambulance services ask so many questions at a time of chaos?***
    - It is the job of ambulance services to make sure that when they arrive, they have the proper equipment and manpower needed to respond in the optimum manner. For example, if it is a child who has collapsed instead of an adult, that information will have to be relayed to them otherwise any adult size equipment may not work. They can also enable you to help in the manner that befits a child best.
3. ***What if I am unable to ascertain if a victim is breathing or not?***
    - This can be a problem, particularly with overweight and obese patients. The key is to check if they are breathing normally. If they are unconscious and breathing very slowly and barely enough to see a visible chest rise, then you have to assume they are in cardiac arrest and start CPR.
4. ***How long should I continue CPR for?***
    - You should continue CPR till:
        - The victim is revived (they become conscious and/or start breathing normally)
        - Ambulance services arrive
        - A second trained responder arrives or you get tired (switch roles)
        - You get exhausted
5. ***What if I break a patient's ribs during CPR?***
    - While this is a possibility, the benefits of CPR far outweigh the risks in terms of saving their life. Rib fractures can heal over time.
6. ***What if I am unable to revive someone with CPR?***
    - Not all victims who receive CPR will survive. While CPR is the only hope for someone experiencing sudden cardiac arrest, it is not a guarantee of life. Be easy on yourself. Your attempt to help someone is what matters.

References:

Mehra R. Global public health problem of sudden cardiac death. Journal of Electrocardiology [Internet]. 2007 Nov [cited 2020 Aug 31];40(6 SUPPL. 1). Available from: https://pubmed.ncbi.nlm.nih.gov/17993308/

Weaver WD, Cobb LA, Hallstrom AP, Fahrenbruch C, Copass MK, Ray R. Factors influencing survival after out-of-hospital cardiac arrest. Journal of the American College of Cardiology [Internet]. 1986 [cited 2020 Aug 31];7(4):752–7. Available from: https://pubmed.ncbi.nlm.nih.gov/3958332/

Annexure A1
PLSP Knowledge Evaluation

PAKISTAN LIFE SAVERS PROGRAMME
Join hands, save lives

Pakistan Life Savers Programme

Hands Only CPR & Stop The Bleed

Knowledge Evaluation

Name: _____ Designation: _____ Institute: _____ Email: _____ Contact Number: _____	نام عہدہ انسٹی ٹیوٹ ای میل رابطہ نمبر
1. During cardiac arrest, what happens to a person? a. The heart is still beating and pumping blood, and the person is still alive b. The heart stops beating, the person doesn't respond and the person isn't breathing normally c. The heart is still beating, the person isn't breathing normally and the blood stops moving d. The heart is still beating and pumping blood, but the person isn't breathing normally	کارڈیک گرفت کے دوران ، کسی شخص کو کیا ہوتا ہے؟ دل ابھی بھی دھڑک رہا ہے اور خون پمپ کررہا ہے ، اور وہ شخص ابھی تک زندہ ہے دل دھڑکنا بند ہوجاتا ہے ، شخص جواب نہیں دیتا اور وہ شخص عام طور پر سانس نہیں لے رہا ہے دل ابھی بھی دھڑک رہا ہے ، فرد عام طور پر سانس نہیں لے رہا ہے اور خون چلتا رہتا ہے دل اب بھی دھڑک رہا ہے اور خون پمپ کررہا ہے ، لیکن وہ شخص عام طور پر سانس نہیں لے رہا ہے

2. Which of the following is the sign of cardiac arrest? a. Vomiting b. Absent breathing c. Chest Pain d. Headache	مندرجہ ذیل میں سے کون سے قلب کی گرفتاری کا اشارہ ہے؟ الٹی سانس غائب ہونا سینے کا درد سر درد
3. How can the consciousness of an individual be assessed? a. Tapping and calling out if they are ok b. Tapping only c. Calling their name only d. Asking if they are ok	کسی فرد کے شعور کا اندازہ کیسے لگایا جاسکتا ہے؟ ٹیپ کرنا اور کال کرنا اگر وہ ٹھیک ہیں صرف ٹیپ کرنا صرف ان کا نام پکارنا پوچھنا کہ اگر وہ ٹھیک ہیں
4. How can the absence of respiration be assessed? a. Look for any chest movement b. Listen for heart sounds c. Tapping the shoulders d. Asking if they are breathing normally	سانس کی عدم موجودگی کا اندازہ کیسے لگایا جاسکتا ہے؟ سینے کی کسی حرکت کو تلاش کریں دل کی آوازیں سنیں کندھوں کو ٹیپ کرنا یہ پوچھنا کہ آیا وہ عام طور پر سانس لے رہے ہیں
5. What do you think Cardiopulmonary resuscitation (CPR) means? a. To apply chest compressions at regular intervals. b. To compress the heart by directly opening the chest wall	اپ کے خیال میں کارڈیوپلمونری ریسیسیٹیشن (سی پی ار) کا کیا مطلب ہے؟ باقاعدگی سے وقفوں پر سینے کے دباؤ کا اطلاق کرنا۔ سینے کی دیوار کو براہ راست کھول کر دل کو دباتے کیلئے صرف بجلی کا جھٹکا لگانا صرف امدادی سانسیں دینا

c. To apply electrical shock only d. To give rescue breaths only	
6. If you witness cardiac arrest, what should be your first response? a. Start CPR b. Ensure your own safety c. Check for Response d. Call an ambulance	اگر اپ دل کی گرفتاری کا مشاہدہ کرتے ہیں تو ، اپ کا پہلا جواب کیا ہونا چاہئے؟ سی پی آر شروع کریں اپنی حفاظت کو یقینی بنائیں رسپانس کے لئے چیک کریں ایمبولینس کو کال کریں
7. What must be the rate of chest compressions? a. At least 150 times per minute b. At least 100 times per minute c. At least 50 times per minute d. At least 70 times per minute	سینے کے دباؤ کی شرح کتنی ہونی چاہئے؟ کم از کم 150 بار فی منٹ کم از کم 100 بار فی منٹ کم از کم 50 بار فی منٹ کم از کم 70 بار فی منٹ
8. Which of the following is a sign of life threatening bleeding? a. Blood that is spurting out of the wound b. Blood that is not pooling on the ground c. Blood seeping slowly out of a small wound d. Blood that has stopped coming from the wound	زندگی میں خطرناک خون بہنے کی علامت درج ذیل میں سے کون سا ہے؟ خون جو زخم سے باہر نکل رہا ہے خون جو زمین پر تالاب نہیں لگا رہا ہے چھوٹے زخم سے آہستہ آہستہ خون بہہ رہا ہے خون جو زخم سے آنا بند ہو گیا ہے

9. What is the first step to stop bleeding from an arm or leg? a. Wait for a responder to arrive with a kit b. Use any clean cloth or gauze and apply steady pressure directly to the wound c. Apply direct pressure on the site of bleeding using your hands d. Use the patients clothing to close the wound	زندگی میں خطرناک خون بہنے کی علامت درج ذیل میں سے کون سا ہے؟ خون جو زخم سے باہر نکل رہا ہے خون جو زمین پر تالاب نہیں لگا رہا ہے چھوٹے زخم سے آہستہ آہستہ خون بہہ رہا ہے خون جو زخم سے آنا بند ہو گیا ہے
10. If you witness severe bleeding, what should be your first response? a. Apply pressure b. Find the source of bleeding c. Call for help d. Scene safety	اگر آپ شدید خون بہہ رہے ہیں تو ، آپ کا پہلا جواب کیا ہونا چاہئے؟ دباؤ لگائیں خون بہنے کا ذریعہ تلاش کریں مدد کے لئے کال کریں مناظر کی حفاظت

Annexure A2
PLSP Skills Station Checklist – Hands Only CPR

Participant Name :			Date:
Study Id _____			
Skill Step	**Critical Performance criteria (Each Participant should be assessed for at least 02 minutes)**		
Rescuers skills Evaluation I - During this phase, evaluate rescuer's ability to assess the situation and call for help		**Y/N**	**Remarks**
1	Assesses: A. Check scene for safety, B. Ensure his own and patient safety ➢ Cover mouth and nose of both himself and the patient		1. 2. 3.
2	A. Check for response. Tap shoulders sand say loudly 'Can you hear me?''		1. 2. 3.
3	A. If no response • Calls for help. • Activates Emergency response System (Ambulance) . B. Check for breathing (Look at the chest for rise and fall & should not take more than 10 seconds)		1. 2. 3.
II - During this phase, evaluate rescuer's ability to perform high quality CPR		**Y/N**	**Remarks**
1	Correct placement of heel of hands (one on top of the other with interlaced fingers) on lower half of breastbone, arms straight, shoulders directly over hands		1. 2. 3.
2	Adequate Rate: 100 – 120 chest compressions per minute.		1. 2. 3.
3	Adequate Depth: Delivers compression at least 2 inches or 5 cm in depth.		1. 2. 3.
4	Allows complete chest recoil		1. 2. 3.
5	• Reassess after every 02 minutes for signs of life (Normal breathing/ Responsiveness) & • Change roles & Resume CPR if no signs of life		1. 2. 3.
III - During this phase, evaluate rescuer's understanding of when to perform stop CPR		**Y/N**	**Remarks**
1	Sees an obvious sign of life (Normal breathing/patient becomes responsive).		1. 2. 3.
2	Another trained responder arrives and takes over.		1. 2. 3.
3			1.
	EMS personnel arrive and take over.		2. 3.
4	Too. exhausted to continue		1. 2. 3.
5	The scene becomes unsafe		1. 2. 3.
Comments: **The interruptions during/between the chest compressions should be minimum not more than 10 seconds.**			
Instructor Signature ..... **Instructor Name.....** **Date .....**			

Annexure A2
PLSP Skills Station Checklist – Stop the Bleed

Participant Name :			Date:
Study Id _____			
Skill Step	**Critical Performance criteria (Each Participant should be assessed for at least 02 minutes)**		
Rescuers skills Evaluation **I - During this phase, evaluate rescuer's ability to assess the situation and call for help**		**Y/N**	**Remarks**
1	Assesses: A. Check scene for safety, B. Ensure his own and patient safety ➢ Cover mouth and nose of both himself and the patient		1. 2. 3.
2	A. Check for response. Tap shoulders sand say loudly 'Can you hear me?''		1. 2. 3.
3	A. If no response • Calls for help. • Activates Emergency response System (Ambulance) . B. Check for breathing (Look at the chest for rise and fall & should not take more than 10 seconds)		1. 2. 3.
II - During this phase, evaluate rescuer's ability to identify and treat life threatening bleeding		**Y/N**	**Remarks**
1	Correct identification of life threatening bleeding		1. 2. 3.
2	Applying pressure at the right location (on top of wound)		1. 2. 3.
3	Demonstrate wound packing		1. 2. 3.
			3.
Comments: **The interruptions during/between the chest compressions should be minimum not more than 10 seconds.**			
Instructor Signature …… **Instructor Name……** **Date** ……			

Annexure B

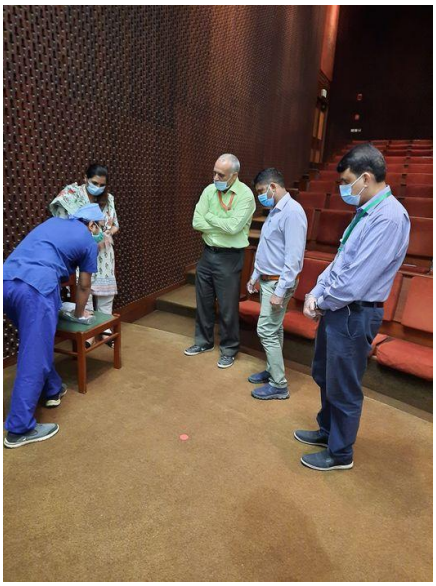
PLSP Provider Feedback Form

Pakistan Life Savers Programme
Feedback Form
Instruction: Please tick the appropriate column that matches your response

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The course learning objectives were clear					
The overall difficulty level of the course was appropriate					
The content was presented clearly					
The quality of the video was adequate					
The Instructor was professional and interactive					
The Instructor helped you practice the skills efficiently to meet the objectives of this course					
The Instructor assisted you efficiently as needed					
The equipment was clean and in good working condition					
The course prepared you to feel confident about practicing these skills					
You will respond to an emergency based on the skills you learnt					

APPENDIX C

PICTURES FROM THE PILOT SESSIONS



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