

## Active Bleeding Control - Can Pediatricians Stem the Tide of Lives Lost From Trauma Through ‘Stop the Bleed’ Training?

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Trauma is a global challenge and India has one of the highest trauma deaths in the world. Despite the United Nations’ target to halve the global number of deaths and injuries from road traffic crashes by 2030, death tolls from road traffic injuries (RTI) are rising in India. In the pediatric age group, falls from height add to the burden of trauma. Uncontrolled bleeding from exsanguination on scene is estimated to account for nearly 40% of RTI trauma related mortality. Stopping the bleeding in the first few minutes is crucial for meaningful survival and hence the role of training lay public who can reach the scene in minutes. Active bleeding control (ABC) pilot research project to simulation train the bystanders to stop the bleed showed promising outcomes in Hyderabad, India. This paper describes the ABC project and discusses the role of pediatricians in training the public to reduce morbidity and mortality from uncontrolled bleeding at the trauma scene.

**Keywords:** *Bystander training, Management, Outcome, Simulation.*

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According to the World Health Organization (WHO), road traffic injuries (RTI) are the leading cause of death for children and young adults aged 5-29 years worldwide. Approximately 1.35 million people die each year globally as a result of road traffic crashes. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury. Around 93% of the world’s fatalities on the roads occur in low- and middle-income countries. WHO warns that the price paid for mobility is too high, especially because proven measures exist, and has called for drastic action to put these measures in place, to be able to meet any future global targets to save lives [1,2]. In children, in addition to RTI, fall from heights, and skids add to the burden of trauma [3,4].

Injuries are one of the most challenging preventable problems India is facing, with very high mortality and morbidity. We continue to lose one precious life every 3-4 minutes on Indian roads just from RTI and one person is severely disabled every few seconds. National Crime Records Bureau reports that during the year 2021, India lost 1,55,622 lives due to RTIs, which is a significant rise compared to 2020 (133,201 deaths) [5,6]. An estimated 40% of RTI deaths are due to uncontrolled bleeding. Despite the worrying figures, this preventable disease has not received much attention. There is an urgent need to improve pre-hospital care, transport through well-equipped ambulance,

and simultaneously improving trauma care in hospitals. Stopping the bleeding in the first few minutes is crucial for meaningful survival, considering the delays between injury and definitive trauma care. Trained first responder is the most critical, and the weakest link in the chain of survival of golden hour [7-9].

### THE ACTIVE BLEEDING CONTROL PROGRAM

Active bleeding control (ABC) is a unique project initiated in Hyderabad to train, equip and empower citizens with the aim to reduce the number of road injury deaths from severe bleeding. ABC is a multi-partner collaboration pilot research project developed by Pediatric Simulation Training and Research Society (PediSTARS) India [10] and GVK Emergency Management and Research Institute (EMRI) [11], in collaboration with Children’s Hospital of Philadelphia (CHOP) [12], Public Health Foundation of India (PHFI) [13], Road safety club, Hyderabad [14], and Transport department, Telangana.

Phase 1 ABC project objective was to develop and implement a lay first responder ABC program to help RTI victims along two high-risk corridors using simulation methodology. A 90-minute curriculum was designed using simple five steps of scene safety, calling ambulance, identifying life threatening bleed, and applying direct pressure and tourniquet. Five steps were taught to mastery, free of cost, using both training videos as well as repeated

practice on simulated patient with the motto "You Are the Help Until Help Arrives." ABC stop the bleed low-cost kits were created to distribute free of cost in both the phases to all those who completed training. Participants were also trained to stop the bleed utilizing available household materials such as towel, shirt, *duppatta* and shawl [15].

In Phase 2, the focus was on creating more trainers by training high school children to become "ABC- Gurus" to train family members and community. This involved needs assessment from 12 schools to understand gaps, and their willingness to train others [16]. This followed rigorous curriculum development with 2.5 hours of simulation training, sharing training materials post training, and supervising students to train four others within a week (multiplier effect) [17].

### Effect on the Community

Phase 1 ABC has trained 1076 volunteers - 351 auto-rickshaw drivers, 325 police personnel; rest were shop-keepers, toll plaza staff, bus drivers, bus conductors, hospital staff and college students. These volunteers have saved greater than 163 lives of RTI victims till the last information available [15,18].

Phase 2 ABC has trained 537 students and teachers from seven government and private schools in Hyderabad to become ABC trainers (ABC gurus). These students and teachers have trained their family and neighbors under guidance, creating a pool of 2724 citizens ready to serve the community [19].

### Scaling Up ABC Countrywide

ABC pilot project has developed a low-cost simple solution for the complex problem of delay in critical intervention needed at the site of life-threatening bleeding from injuries. If this simple and easy training reaches most of the citizens countrywide, soon India will see a strong resilient community, saving many lives. ABC training not only empowers citizens to identify and stop the bleed, but it also trains them in activation of ambulance services and calming the victim. Empowering the community will have the additional benefit of awareness towards prevention of RTI, enhancing the community's capacity to look after each other, and stop the bleeding during non RTI bleeding such as disaster or mass casualty events, and calling ambulance early for non-injury emergencies such as cardiac arrest [15].

However, there are several challenges at the individual, organizational and national level in implementing ABC training.

*Lack of understanding:* Lack of awareness of the problem, understanding significance of bystander training in saving lives – at individual, organizational and government level is a major barrier.

*Funding:* Securing funds for ABC training, training the trainer, recruitment of volunteers, stop the bleed kits, data collection, and evaluation, needs funds and is challenging unless the importance of the program is well understood

*Lack of trainers:* Any program to be successful, the key is dedicated competent trainers. Currently there is no Stop the Bleed training curriculum integrated in healthcare training

*Legal hassles:* Worry about police case and fear of need to attend court hearings for getting involved in a RTI case.

*Personal loss:* Loss of wages for those volunteers during helping the victims, and pressure from passengers during stopping the vehicle to help injury victims

*Fear:* Fear of blood, crowd control, fear of what might happen if more harm done during helping the victim, and fear of death of victim during ABC.

Some of these barriers were studied by the authors and published previously [15].

### Overcoming the Challenges

Any new program to uplift the society from a problem such as prevention of deaths on the roads needs stepwise structured approach. It needs a serious culture change and contributions from public, public health specialists, healthcare team, academicians, researchers, government and non-government agencies.

### ROLE OF PEDIATRICIANS

Pediatricians have an unmatched position and unique role in the community to create that much needed change. They have the ability to reach out to children, parents, schools, organizations and policymakers to build committed relationships with compassion and trust, greater than any others in healthcare. Apart from losing parents, families and pushed to poverty from loss of GDP (Gross Domestic Product), RTI is a huge childhood endemic disease. According to UNICEF, globally road traffic injuries represent the leading cause of death in ages of 5-19 years [4]. If concerted efforts are made, thousands of lives can be saved and an even bigger impact on avoiding disability. The cause is urgent, the need is strong and the time has come for pediatricians to bring all together for this great cause.

### How Can Pediatricians Make a Difference?

There are several ways pediatricians can help to spread awareness and training in ABC. **Box I** and **II** suggest some of the ways interventions can be planned. Small steps starting from home, neighborhood, recreational areas, individual hospitals and gradually creating an interest group to reach all the unreached in training ABC. The pilot

**Box I Challenges and Solutions to Creating Awareness About Active Bleeding Control (ABC)**

*Lack of understanding the problem and role of ABC*

- *Individual level:* Create awareness to all in family, neighbors, schools, shops, enroute to work, recreational areas.
- *Hospital:* ABC awareness in - outpatient and family waiting areas; hospital training times to all medical and non-medical staff; outreach hospitals; mass campaign in social media, television, newspapers.
- *Organizational:* ABC discussions in conferences. Reaching out to schools, colleges, workers and drivers association, village heads, municipalities, NGOs. ABC flash mobs, skit competitions during public celebrations.

*Police harassment*

- Create awareness during ABC campaign and training regarding the Supreme Court order of “Good Samaritan Law” to provide legal immunity to helpers of RTI victims [20].

*Fear of blood, harm, death*

- Reinforce the motto “You are the help Until the Help arrives” during awareness and training [15].
- Encourage public discussions about overcoming fear of blood, the good samaritan law and the fact that the worst thing a citizen can do is “Do Nothing.”

*NGOs: non-government organizations.*

project has already shown how to create low cost, made in India ABC- Stop the Bleed kits. Buy-in from village heads, collectors, municipality, media, corporates, non-governmental organizations (NGOs) is crucial. Professional bodies such as Indian Academy of Pediatrics can play a vital role in this. Ultimately, transforming stop the bleed training in to a mass movement by motivating the policy makers to make ABC training mandatory for all new drivers, and integration of ABC in healthcare training could be a ray of hope for the next generation. **Fig. 1** illustrates the strategies required for dissemination of stop the bleed training.

**CONCLUSION**

Training the citizens to stop the bleeding during the first few minutes is crucial in the chain of trauma survival. Simple, low-cost ABC training of lay public has proven to

be feasible and effective. There is an urgent need for implementation of strategies to stem the tide of trauma deaths from uncontrolled bleeding. Pediatricians have a unique role in training the public, to create that much needed culture change in the community, to build a strong resilient society saving thousands of lives. India has a great potential and no barrier is large enough if we show that the cause is strong.

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**Box II Challenges and Solutions Related to Pediatricians’ Role in Training Public in Active Bleeding Control (ABC)**

*Lack of trainers*

- *Individual:* Train family, neighbors, shop keepers, social contacts to create ripple effect.
- *Hospital level:* Create pool of volunteer trainers in hospital to reach out to community for multiplier training in - outreach hospitals, schools, colleges, driving schools, village heads, municipality, collectors, police, NGOs
- *Organizational level:* Certified ABC training by IAP and motivate organizations from surgeons, physicians, EMS to conduct ABC “Train the Trainer” courses. Mass training healthcare team and public during special annual events such as “World Trauma Day”
- *Government/ National:* Motivate Government to create a central body to regulate and supervise ABC training and outcomes. Reaching out to policy makers at state and national level for implementing ABC training in high schools and to all new drivers. Convincing Government to implement ABC training to medical, nursing, EMS and allied healthcare students.

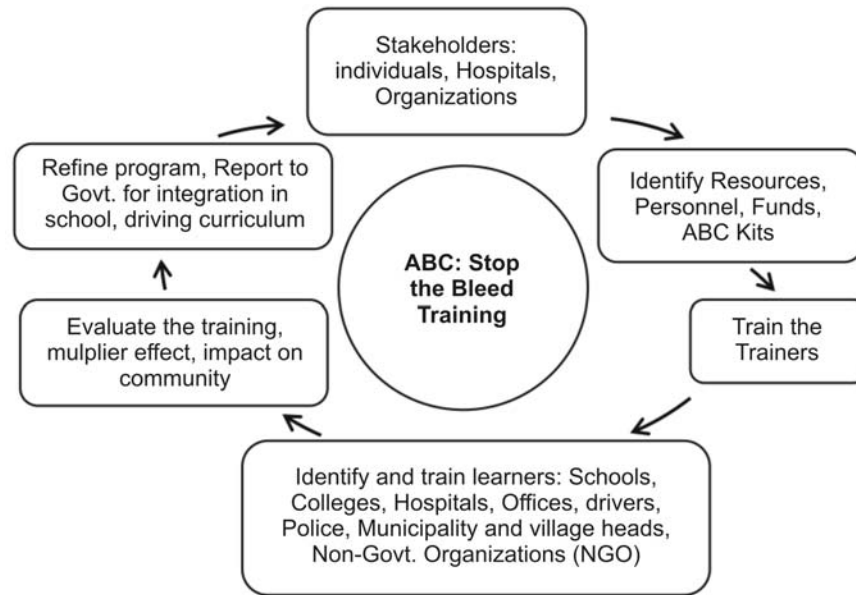
*Funding*

- *Local:* Pooling resources from CSR funds of companies, industries, crowd funding, fund raising events such as marathon
- *National:* Persuading Government to dedicate funds specific for ABC.

*Personal loss of wages*

- Incentives for public who help bleeding victims.
- Rewarding life savers – Honoring in Public during special events/ festivals to recognize dedication to ABC

*NGOs: non-government organizations; IAP: Indian Academy of Pediatrics; CSR: corporate social responsibility.*



**Fig. 1** A suggested strategy for dissemination of training in Active Bleeding Control (ABC) by pediatricians.

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