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Post-crash emergency response toolkit

European Bank
for Reconstruction and Development

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UKaid
from the British people

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1. Foreword

The European Bank for Reconstruction and Development (EBRD) recognises the high social and economic costs of road deaths and injuries. The EBRD supports the aims of the United Nations (UN) Decade of Action for Road Safety 2021-2030, calling for reductions in road deaths and injuries in all countries. The Bank is working with its stakeholders to improve road safety standards and identify ways of achieving this goal.

This *Post-crash emergency response toolkit* has been created to assist in the management of post-crash response to save lives and improve outcomes for survivors. Efficient post-crash response could greatly reduce road fatalities in low- and middle-income countries. The EBRD welcomes this toolkit as a basis for building more effective post-crash strategies.

2. Introduction

2.1. What is this toolkit?

This toolkit sets out the key elements of effective post-crash emergency response. The toolkit covers:

- reasons for taking action
- the main elements of post-crash response
- examples of best practice
- helpful resources.

2.2. Who is this toolkit for?

The toolkit is for all stakeholders with an interest in post-crash response. This includes:

- government departments and policymakers
- local and regional government
- emergency service managers and professionals
- paramedics and community responders
- lay people and members of the community
- crash survivors, families and organisations representing them.

2.3. How to use it

The toolkit describes basic good practice for organising effective post-crash response. It is a starting point for dialogue and discussion, aimed at identifying goals for improving post-crash services.

Every country has different structures and challenges, so the toolkit is not "one-size-fits-all." However, certain elements of good post-crash response apply everywhere: the need for strategic planning and investment, good coordination, communication, equipment and training.

We hope the toolkit will be a helpful resource for joint planning. Involving all stakeholders is the best recipe for success.

2.4. Improving post-crash response: why governments should act

Road deaths and injuries are preventable with good road safety management. The World Bank estimates that globally, road crashes in low- and middle-income countries result in nearly 20 million injuries and deaths per year. It is estimated that improvements in trauma care could save more than a million lives, cutting road injury deaths by up to 30 per cent.[1]

Moreover, the estimated cost of road casualties to these economies is US$ 1.7 trillion and on average, over 6.5 per cent of gross domestic product (GDP). The cost of every road death and injury is measured in lost taxes, lost economic opportunities and more households pushed into poverty.

Road crashes are the number one killer of young people aged 5 to 29 in every world region, affecting future development. Those who are economically active are also more likely to be killed and injured on our roads.

Good post-crash response has wider benefits too. The systems needed to save a life or prevent an injury becoming life-changing are also important for responding to natural disasters and other crises. By acting to improve post-crash response, governments are investing in their countries' overall well-being.

2.5. Global commitments: UN Decade of Action for Road Safety 2021-2030 and post-crash response

Commitment to improving post-crash response is a core part of global action to reduce road casualties.

In 2010, United Nations Member States proclaimed a UN Decade of Action for Road Safety 2011-2020. This resulted in a plateauing of road traffic deaths around the world. More action is now required. The global goal is to prevent at least 50 per cent of road traffic deaths and injuries by 2030.

In February 2020, Ministers from around the globe agreed to the Stockholm Declaration on road safety. This emphasises the importance of a safe systems approach (see below) and calls for continued improvements in the design of roads and vehicles, enhancement of laws and law enforcement on behavioural risks (such as speeding, and drinking and driving), and the provision of timely, life-saving emergency care for the injured.

Following this, a Decade of Action for Road Safety 2021-2030 was proclaimed by the United Nations in August 2020 (Resolution 74/299) and ratified by Member States. This new Decade of Action provides an opportunity for harnessing the successes and lessons of previous years and building upon them to save lives.

[1] See World Bank (2020).

The Stockholm Declaration resolves to: "Encourage and incentivise the development, application and deployment of existing and future technologies and other innovations to improve accessibility and all aspects of road safety from crash prevention to emergency response and trauma care."

2.6. **Safe systems approach and post-crash response**

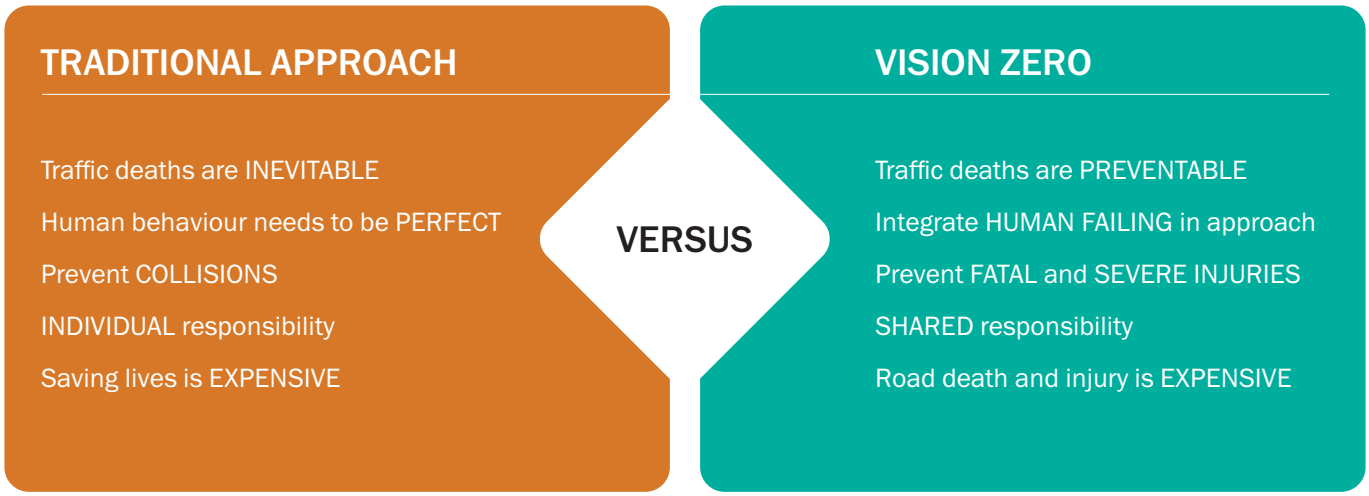
The safe systems approach underpins the UN Decade of Action plans for reducing road death and injury. It acknowledges that people make mistakes and that these errors should not lead to severe or fatal injuries. It recognises that road safety is a shared responsibility for those who manage, plan, design, build and use roads and vehicles, and those who provide post-crash care.

It is a holistic approach that requires coordination across many departments and experts. It involves different areas of action for governments:

- road safety management, information and strategy
- safer road design
- safer vehicles
- safer road use and enforcement of road rules
- effective post-crash care (video from the World Health Organization (WHO)).

Forgiving road design, safer vehicles, effective enforcement, speed management and other factors are all important to reducing death and injury. It is also vital that those injured should be rescued swiftly and receive adequate trauma care.

Many countries have gone further to adopt a Vision Zero approach developed by Sweden. Vision Zero recognises that people sometimes make mistakes. The road system and transport policies should be designed to ensure that these mistakes do not lead to death or severe injuries. To achieve the goal of zero deaths, everyone involved in road safety policy has a role to play.



2.7. **Voluntary targets and post-crash response**

In order to guide countries towards a 50 per cent reduction in road traffic deaths and injuries, a set of 12 voluntary performance targets and their associated indicators were agreed by UN Member States in November 2017. Target 12 calls on all countries to put in place targets to minimise the time between a road traffic crash and the provision of emergency care.

The two associated indicators are:

- 12.1: Number of countries that have achieved the national targets of the time interval between a crash resulting in serious injury and the provision of first professional emergency care.
- 12.2: Number of countries that have appointed agencies for effective coordination of the provisions of pre-hospital and facility-based emergency medical services.

Target 12: By 2030, all countries establish and achieve national targets in order to minimise the time interval between a road traffic crash and the provision of the first professional emergency care.

The 12 voluntary targets can be found here – note that only target 12 relates to the post-crash phase. These targets provide guidance for countries on activities and measures to achieve the voluntary global road safety performance targets.

3. Post-crash response framework

3.1. Overview

Effective emergency care is at the heart of post-crash response. It can make the difference between survival and death and can prevent injuries becoming permanent and life-changing. Post-crash response starts the moment someone is injured in a crash (see Figure 1). It is a long-term process and involves multiple providers.

The key elements of post-crash response are:

- at the scene: reporting a crash, dispatching help, caring for victims and managing the scene
- transport to a treatment facility
- at the treatment facility: triage and injury care
- follow-up: rehabilitation, mental health and victim care, and management of disabilities.

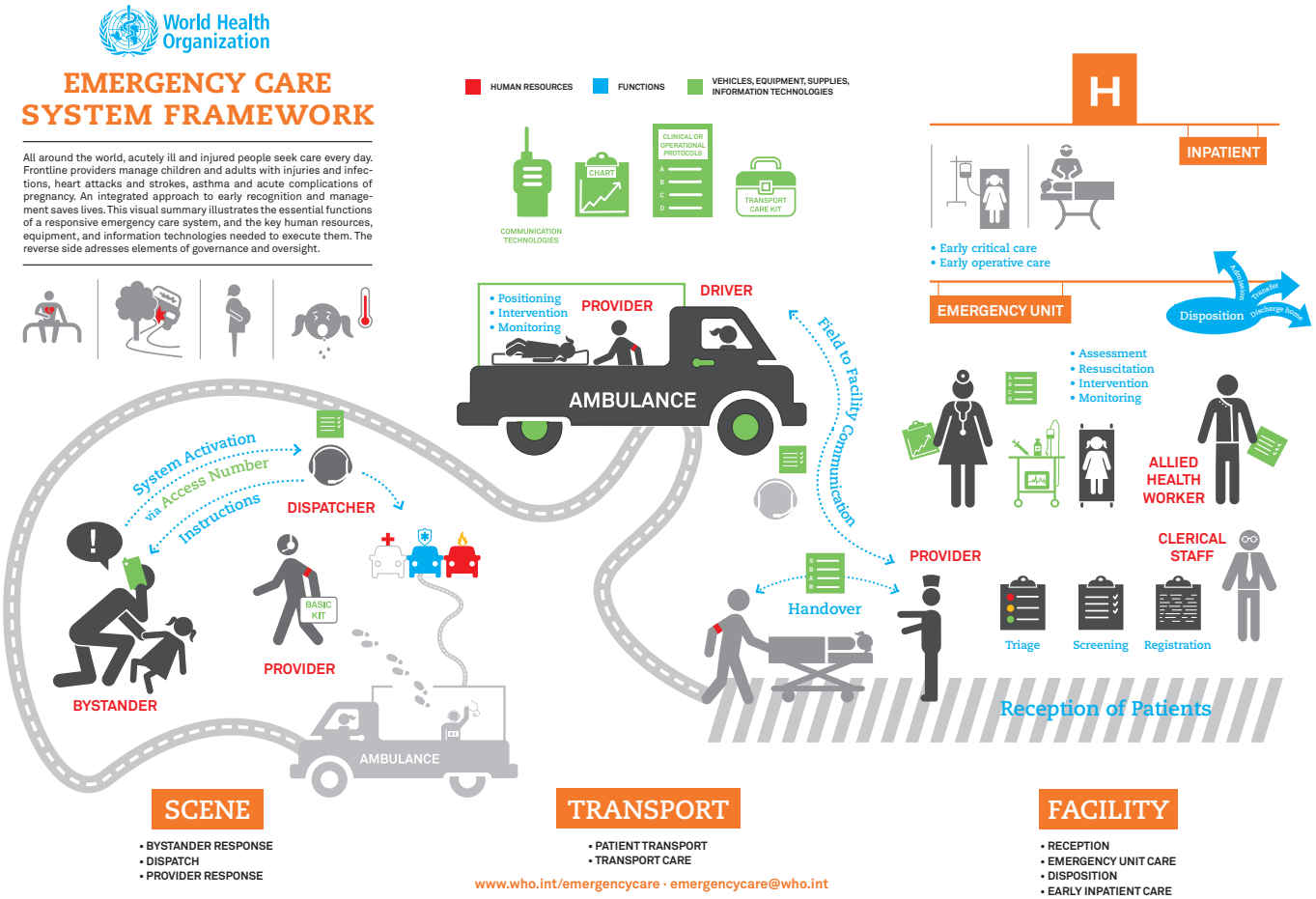
These are underpinned by good data, investigation and reporting, good communications and legal support for those affected.

Post-crash response is a long-term process involving multiple providers. This requires good coordination. Strategic planning at a national and local level is vital.

3.2. Reporting a crash

Often the first person at the scene of a crash is not a member of the emergency services. They are typically bystanders and they need to be able to communicate wherever the crash occurs.

Figure 1. WHO Emergency care system framework



Source: https://www.who.int/publications/i/item/who-emergency-care-system-framework.

"To activate the emergency care system, ideally, there should be a single telephone number, easy to remember and available as a free call." WHO

If mobile communications do not reach some regions, this can be a problem. Ensuring the telecommunication system reaches wherever crashes occur should be part of emergency planning.

Ideally, there should be a single national number that everyone knows.

Universal emergency care access number

There should be a single nationwide or regional telephone number that is:

- valid throughout the country
- available as a free call from every telephone (landline or mobile)
- easy to remember and dial (limited to three or four digits)
- linked to a dispatch centre that can rapidly send an equipped ambulance with trained personnel
- able to guarantee the confidentiality of the caller.

Source: WHO (2016).

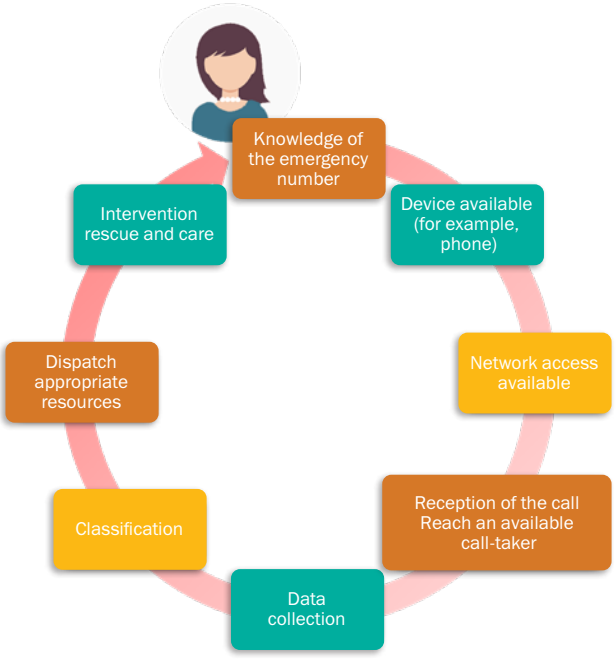
What is the emergency care access number in your country?

3.3. Effective dispatch

It is important to minimise the time between a road crash and the provision of emergency care. This means trained dispatchers must be available to answer calls at all times, with minimum waiting.

Figure 2. Emergency call handling service chain description

Any number rung must go through a central telecommunications system so dispatchers can activate the right services. The dispatcher should have a link to the caller to provide ongoing support and be able to call back if necessary.



Source: European Emergency Number Association (2020).

The first task is to collect essential information, starting with "Where are you?", "What happened?" and "Are you safe?". While the caller answers, the dispatcher should be sending responders (police, fire or ambulance).

Next, more detailed information is needed to send all the correct services and categorise the severity of the incident. Data collection also helps for planning future service needs.

The dispatcher needs triage training to assess which services are needed for different emergencies: often more than one is required. Dispatchers may need to prioritise between more and less urgent calls. This requires training and good coordination between services.

Once services are dispatched, these need to arrive quickly and be properly trained and equipped for the incident. In the meantime, remote assistance can be helpful.

There are two main models for dispatch services. The first involves a single, highly-trained call taker who gathers information and dispatches the emergency responders required. In the second model, the first call taker filters calls (triages). They pass them to a specialised dispatcher or directly to the appropriate emergency service.

In either model, it is vital that the emergency call handling chain has proper investment, equipment and trained personnel to ensure the best outcomes for road victims.

Case study 1. **Effective communication and dispatch – Georgia's 112 service**

Efficient communications and dispatch are vital for saving lives and reducing injury outcomes after a road crash.

In 2012, the Ministry of Internal Affairs in Georgia invested in a 24-hour emergency response centre. This receives calls and dispatches responders from everywhere in the country via a unified emergency call number – 112.

This single number replaced three different call numbers for police, fire and ambulance. The system accepts direct phone calls, SMS and video calls, silent alarm calls and even calls via social media. 112 has also developed an interactive app which can be utilised by everyone in the country.

The system unites the core services – fire and rescue, patrol police and ambulance service – with road safety management. The 112 system receives over 3.5 million emergency calls per year – more than 9,500 calls each day. Call handlers for 112 pass calls directly to the appropriate dispatch centre within each service. This unified call and dispatch system has had great benefits with reduced response time and better deployment of emergency services.

The aim of 112 is to provide advanced and maximally available assistance to citizens during emergency situations. It also raises public awareness about how to behave in emergency situations.

Options for improving communication between emergency responders, hospitals and bystanders at the scene are now being considered – including vehicle-mounted data systems to send images from the scene.

3.4. Caring for victims: lay providers

Those first at the scene – lay providers such as police, truck and taxi drivers, and sometimes community volunteers – should conduct a primary survey and provide first aid prior to the arrival of the ambulance and professional emergency responders. They need to be protected from liability when stepping in to assist.

Elements of the primary survey are:

- ☑ **DANGER** Is it safe to approach?
- ☑ **RESPONSE** Is the casualty responding?
- ☑ **SHOUT** Shout for help!
- ☑ **AIRWAY** Is the airway open and clear?
- ☑ **BREATHING** If not breathing, commence CPR.
- ☑ **CIRCULATION** If bleeding severely, treat immediately.

In the European Union, all drivers must have a small first aid kit in their vehicles in case they need to provide life-saving aid.

It is recommended that road police and firefighters receive first aid training, renewed on a yearly basis. It is also beneficial to train community volunteers and groups such as truck, bus or taxi drivers in basic first aid skills. This will enable them to stabilise the casualty during the critical first minutes after a crash.

A number of organisations, such as the Red Cross and Red Crescent, are competent first aid trainers.

The Global Road Safety Partnership and the International Committee of the Red Cross have a short First Aid booklet which might be useful for training purposes.

The booklet is also available in Arabic and Russian.

First aid kit

A first aid kit should contain the following items in order to enable people not formally trained in medicine to perform the actions required to save or protect lives:

- information booklet with emergency numbers
- isothermal rescue blanket
- pair of gloves
- non-sterile gauze dressing
- bandage
- safety pins or adhesive tape
- rubber tourniquet
- single-use antiseptic fluid
- triangular bandage
- face mask
- pair of scissors
- small torch.

Source: United Nations Economic Commission for Europe (2010).

CHECKLIST		
Do lay providers offer first aid at the scene of a collision?	Yes	No
Is there a single telephone number to call emergency services?	Yes	No
Do lay providers receive first aid training?	Yes	No
Is the training renewed on a yearly basis?	Yes	No
Are drivers obliged to carry a first aid kit in their vehicles?	Yes	No

Case study 2. **Training lay personnel in Iraq and Cambodia leads to reductions in mortality**

A five-year study was conducted in northern Iraq and in Cambodia between 1997 and 2001. A total of 5,200 lay personnel and 135 paramedics were trained to provide basic trauma care in the field. During that time period they attended to 1,061 trauma victims – 407 in Iraq and 654 in Cambodia. The majority of patients were victims of landmines or road traffic crashes. Using this approach, the pre-hospital mortality rate was reduced from 40 per cent to 14.9 per cent over the study period, leading to the conclusion that low-cost rural trauma systems have a significant impact on trauma mortality in low-income settings.

Source: Husum et al. (2003).

3.5. Intervention at the scene

Assessing the scene

Rarely do all emergency services arrive at a crash together. There are vital tasks any agency should do if they arrive first.

The most important task is a quick, general assessment of the scene. The scene assessment should identify:

- any risks or hazards present
- the number of vehicles involved and their condition
- the number of casualties and how they appear
- any unusual features which may hinder emergency responders.

A list of considerations can be found at the Road traffic collision page of the National Fire Chiefs Council – Fire Central Programme Office.

It is tempting to begin dealing with issues such as treating casualties. However, unless there is an immediate threat to life, this should be avoided. It is important to get a full picture first. Otherwise, the scene assessment may be forgotten and never fully completed, meaning important risks or even casualties can be missed.

Most scene assessments will be completed very quickly, but where the collision involves multiple casualties or a large area it can take a little longer. If time allows, it is good practice to record the significant findings in writing.

Information from the assessment should be reported to the dispatcher, along with any special instructions about the scene. The dispatcher may need to amend their initial instructions.

As other responders arrive, they should undertake their own specific assessments, for example the ambulance service assessing casualty priorities. This information is shared between commanders for joint planning.

Response time

The time taken to respond to an incident can vary. Longer response times can increase the chance of fatalities or serious injuries before the professionals arrive.

However, this does not have to be wasted time. An option to consider is the use of remote assistance, where phone contact is maintained between a trained dispatcher and a lay person at the scene. The benefits are that:

- information is shared to help emergency services prepare for arrival
- lay people at the scene can be supported to give first aid under professional direction
- any changes in the situation at the scene can be reported
- the progress of the emergency vehicles that have been dispatched can be reported to those waiting.

Even in the absence of medical assistance, the human value of someone just being with and talking to a casualty should be remembered.

Ensuring the scene is safe

It is vital to ensure the scene is safe for emergency responders and to prevent any further injuries.

Carrying out rescues and attending to casualties can require a lot of space. To ensure the safety of the responders, this space should be physically marked out and protected, preventing intrusion from bystanders or traffic.

If necessary, parts of the road may need to be closed. Depending on the risks, periodic or constant monitoring will be required.

For the benefit of the casualty and responders, vehicles involved in the crash should be stabilised before rescues are attempted. Care must also be taken to manage other

risks from the vehicle. These might include fuel leaks, the vehicle electrical system and undeployed airbags.

Incident command

There can be only one person in charge and only one plan operating at any time.

Police, ambulance, fire and emergency services should agree a single lead agency to manage the scene. This ensures different services do not compete with each other or waste time. It is also critical for the safety of emergency personnel. At the scene, commanders from each agency should be clearly visible. They should make immediate contact with each other to share information. They should assess the situation together so they can form an agreed response plan.

The response plan should identify what actions are needed, as well as roles and responsibilities. While at the scene, commanders should review the response plan regularly and make changes if necessary.

An agreed communications strategy is important. Communications should be clear, only relaying facts without making assumptions.

The lead agency should gather and record information, including:

- location and time of crash
- emergency response arrival time
- vehicles involved
- age and sex of casualties
- which emergency services were present
- the response plan
- what first aid was administered
- the outcome (for example, if the casualty was taken to hospital.

It is also useful to interview witnesses. All information is useful for patient management, strategic management and review.

The rescue plan

Before deploying resources, commanders should agree how to manage the incident. Vehicles may require stabilising before attempting rescues. Care plans may be needed for casualties (to preserve life and quality of life).

Having prioritised tasks, the agreed rescue plan should be implemented methodically. The incident commander verifies progress.

If progress is not made or the situation deteriorates, an alternative plan may be needed, based on the same joint planning.

Throughout, good scene management, use of agreed protocols and operating equipment safely are important.

A final assessment should ensure nothing has been missed. Each service should check it has all its equipment (particularly anything contaminated).

Police investigations are needed after serious incidents. Time and space need to be allowed for this. While allowing for safety, the scene must be preserved to enable full investigations.

After any investigations are completed, the incident commander should ensure the road is left in a safe condition or has been passed to the control of an appropriate agency to manage. All debris and fluids must be cleared away.

3.6. Emergency medical care

Pre-hospital medical care

As we have seen, those first at the scene – lay providers – may need to give first aid prior to the arrival of the emergency services. Ideally, well-equipped ambulances with trained paramedics should arrive soon to provide life-saving care to the injured before reaching hospital.

Emergency services must be able to reach victims quickly: every minute is critical. For this reason, ambulances need to be located strategically, so that people in all areas have access to emergency care.

Saving life is of course the key priority when deciding on casualty management. However, it is also important to ensure each casualty attains the best quality of life outcome possible. This will be greatly influenced by the care they receive at the scene and prior to arrival at a hospital.

Ideally, ambulances should have equipment that allows patients with breathing difficulties to be intubated, oxygenated and ventilated on the way to the treatment facility. As a minimum, they must be able to move and transport victims safely and monitor them during the journey.

If no formal ambulance service is available, patients can be transported by taxi or private vehicle. Basic emergency training should be provided to these lay providers.

Communication is vital throughout. Sending photos ahead to professional emergency responders or to the treatment facility can help.

"Triage is the term used for the process of classifying patients according to the severity of their injuries to determine how quickly they need care."

Prioritising patient care through triage

In the case of multiple road traffic casualties, trauma triage is a useful tool to sort injured patients according to their individual need for emergency medical treatment. This process prioritises patients' needs by a very brief observation based on a primary survey. Its aim is to identify the victims in need of urgent treatment and to achieve the greatest good for the greatest number of casualties by using available resources. It is a dynamic process which recognises that patients allocated to one level can change to another.

Patients are prioritised in triage groups as:

RED: immediate

YELLOW: urgent

GREEN: walking wounded

BLACK: dead or dying.

Source: Primary trauma care participant course book.

Do your emergency medical services have a triage protocol?

Trained emergency carers

Once the well-equipped ambulance has arrived, the trained emergency carers should take over the care of the casualty.

The emergency carers can be the following:

- Trained in basic life support, and sometimes called emergency medical technicians, they have training in pre-hospital care, scene management, rescue, stabilisation and the transport of injured people.
- Trained in advanced life support, and sometimes called paramedics, they can provide sophisticated or complex management, such as intubation and insertion of intravenous lines, in order to stabilise critically injured casualties.

They should assess (triage) the casualties by following an appropriate protocol and immediately start treatment at the scene.

All trained emergency carers should be covered by Duty to Care laws and professional ethics.

The carers should communicate with the closest hospital to inform them of the imminent arrival of a casualty so that they are ready to receive the patient.

The WHO pre-hospital trauma care systems guidelines provide a good overview of the roles and responsibilities of various emergency care practitioners.

CHECKLIST		
Are ambulances well equipped?	Yes	No
Do emergency carers have basic life support training?	Yes	No
Are trauma patients triaged at the scene of the crash?	Yes	No
Do emergency carers inform the closest hospital of the imminent arrival of a trauma patient?	Yes	No

"Timely emergency care saves lives: if fatality rates from severe injury were the same in low- and middle-income countries as in high-income countries, nearly two million lives could be saved every year."

3.7. At the treatment facility

A coordinated approach

The hospital facility should be informed of the arrival of a casualty ahead of time. That way, they are ready for the patient and can react rapidly on arrival. This means effective triage, screening, registration and, if needed, resuscitation, followed by rapid intervention by trained trauma care specialists. If a transfer is needed to more specialised care, this should be anticipated and facilitated.

A team approach to initial resuscitation should be applied in large urban centres, as well as in smaller rural facilities.

The emergency team should use a systematic approach to every injured person, to ensure that life-saving interventions are performed and that no life-threatening conditions are missed.

The WHO Trauma Care Checklist is a simple tool – designed for use in emergency units – that emphasises the key life-saving elements of initial trauma care.

A team approach to trauma care

A trauma team is a multi-sectoral group of professionals from various specialities who need to rapidly resuscitate, stabilise, diagnose and make a plan to treat a trauma patient. The resuscitation of severely injured patients usually involves many personnel and too often takes place in an environment of anxiety and confusion. A well-planned and organised approach to such patients is fundamental to optimal management.

The composition of the team will vary between regions, countries and continents, but leadership is critical as it leads to improved orderliness of resuscitations. At the very minimum, most teams include:

- team leader (usually a doctor or surgeon)
- airway control (doctor or nurse)
- primary nurse
- x-ray technician
- laboratory technician.

Most high-income countries have trauma teams in place. This has shown that good organisation and pre-assigned roles for team members, together with treatment protocols, lead to improved outcomes for patients.

A number of low- and middle-income countries have started using trauma teams in their emergency units. In Turkey, for example, a newly established trauma team in a large urban trauma centre saw mortality of patients with injuries severe enough to require admission to hospital drop from 33 per cent to 23 per cent. These improvements were ascribed to better management of airways and shock.[2] Botswana and Tanzania have recently trained staff in the team approach to trauma care and are applying the principles in their emergency rooms.[3,4]

[2] See H. Özgüç et al. (2000).
[3] See Bergman et al. (2008).
[4] See Hanche-Olsen et al. (2015).

Training in trauma care

Facilities that provide trauma care should have well-trained personnel. Trauma and emergency care should be included in the curricula of schools of medicine, nursing and other allied health disciplines.

It is critical that all emergency response personnel are appropriately trained.

The International Committee of the Red Cross and the WHO have an open-access training course for frontline healthcare providers working in low-resourced settings who manage acute illness and injury.

What training courses are available in your country for doctors and nurses?

The Primary Trauma Care Foundation exists to save lives and prevent disabilities in low- and middle-income countries. They use a "whole team approach" to teach frontline health workers how to deliver emergency medical care with only basic equipment. This life-saving training is completely free.

The Basic Emergency Care course teaches a systematic approach to the initial assessment and management of time-sensitive conditions and injuries where early intervention can save lives. It can be adapted for lay providers and emergency responders.

CHECKLIST		
Is there a team approach to managing trauma in your hospital?	Yes	No
Do you use a trauma checklist in your hospital?	Yes	No
Are your doctors trained in emergency medicine?	Yes	No
Are your nurses trained in emergency care?	Yes	No

"Rehabilitation is defined as "a set of interventions designed to optimise functioning and reduce disability in individuals with health conditions in interaction with their environment." WHO

3.8. **Rehabilitation and victim support**

Rehabilitation

Road crashes are a leading cause of injury-related disability. Research from South Korea found that one-third of road victims lost their jobs due to the physical impediments they faced.[5] Sadly, road injury can lead to individual and family poverty.

Rehabilitation for survivors of road traffic crashes is an essential part of universal health coverage across the world. Timely and appropriate rehabilitation reduces the impact of road injuries by helping survivors be as independent as possible. This will enable them to participate in education, work and family life.

Rehabilitative medicine includes diagnosis and treatment, therapy to reduce impairments and treatment of any complications. Both physical and mental rehabilitative care is often needed. It is important, too, to offer help with practical needs – such as assisting mobility and independence.

Sadly, the need for rehabilitation is largely unmet in most countries.

A free Global Health and Disability course is available to take over three weeks.

"The post-crash response is so much more than just flashing blue lights, blaring sirens and scurrying medics. It includes the most basic of human rights – information and support to the grieving family – which is oftentimes overlooked in the chaos."

Support for victims and their families

Civil society organisations can provide helpful support for victims and their families. This can involve emotional support and advice, or help with access to therapy and assistive equipment. They can also play an important role helping victims negotiate the legal system – criminal prosecution, trials, sentencing, compensation and justice.

Good post-crash investigation is fundamental to justice for victims and their families. Police investigators should be trained and equipped to carry out this function.

The Global Alliance of NGOs for Road Safety and the WHO published a guide to help civil society organisations around the world advocate strategically for road safety. This document is available in English and Russian.

Is there a non-governmental organisation in your country that supports those injured in road traffic crashes and/or their families?

[5] See Jung and Sul (2014).

Case study 3. **Contribution by civil society – Ukraine**

In Ukraine, civil society organisations have played a key role in improving post-crash response. Since 2015, the community of Korosten in Zhytomyr Oblast has partnered with fire and rescue services and the Ukrainian non-governmental organisation Impact to access equipment and training for local fire services to improve post-crash response. Since 2015, international donors EASST and FIRE AID have donated five fire response vehicles, hundreds of sets of personal protective equipment (PPE) alongside six training courses. In 2019, 12 sets of road crash cutting equipment were donated to 10 fire stations across the Zhytomyr region. During 2020 alone, these were used to extricate 144 casualties.

In addition, a unique training car was donated to the Lviv State University of Life Safety, the country's national training school. The transformer car is a reusable training simulator, which allows instructors to demonstrate life-saving extraction techniques. This training tool has been used in demonstrations to the President of Ukraine Volodymyr Zelensky, drawing attention to the importance of training in effective post-crash response.

A fire-fighter from Korosten emphasised the life-changing potential these projects have had: "The techniques I have just learned are new to us but will undoubtedly be very useful. Only last week we attended an incident where a bus driver was trapped in his cab. Using these techniques and having the benefit of the new equipment, we would likely have been able to save the driver's life."

"A Good Samaritan is a person who, in good faith, without expectation of payment or reward and without any duty of care or special relationship, voluntarily comes forward to administer immediate assistance or emergency care to a person injured in an accident, or crash, or emergency medical condition, or emergency situation." SaveLIFE Foundation, India

3.9. **Legislation**

Good Samaritan protections

Civilian bystanders are often the first to report a crash and may be the only people available to help victims until trained paramedics arrive. Legal protection should be in place to protect lay providers from liability since they provide assistance without expecting a reward.

A "Good Samaritan" law is defined as "a law that protects people from legal repercussions when they believe another person is injured and decide to help them out."

The reason that many countries have a "Good Samaritan" law is to encourage ordinary people to help an injured or distressed person before the police or ambulance get there, without having to fear the injured person might sue them.

Duty to care

In most countries, healthcare workers and other emergency responders have a duty to care even if they are off duty.

For instance, if an off-duty paramedic comes across a road traffic collision, they have a duty to stop and provide aid to the casualty. Since they are bound by a Duty to Care law, they are not covered by a Good Samaritan law, and are thus legally responsible for their actions.

Most healthcare workers are also bound by professional ethics.

Third-party compensation

Third-party car insurance is a motor insurance contract that ensures the protection of the vehicle driver against unforeseen "no fault" liabilities arising from third-party vehicle and property damages, injuries, disabilities and death.

Case study 4. **United Arab Emirates becomes first Arab country to pass "Good Samaritan" law**

A survey conducted in the United Arab Emirates (UAE) in 2019 found that one in five people believed that they would be legally held responsible if they helped a casualty after a road traffic collision and something went wrong. However, the same survey also showed that 78 per cent of people would be willing to help if a "Good Samaritan" law was passed which would indemnify them from any liability.

Currently, less than one-quarter of people surveyed in the UAE have ever been trained in cardiopulmonary resuscitation and one-third had basic first aid training. But this is set to change as the Rescuer Protection Law was approved by the UAE Ministry of Health and Prevention and signed into law in December 2020. It includes provisions to train residents to save lives in emergency situations. The UAE joins other countries such as Australia, Canada, Germany, Philippines, South Africa, the United Kingdom and the United States of America that have Good Samaritan laws that provide legal protection to people who provide help in emergency situations.

Source: Kaleej Times.

Restorative justice

Crash scene investigation is key to justice for victims of road crashes and prevention.

The information collected is important for law enforcement, to support victims and to identify ways of preventing other tragedies.

National situational reviews should be conducted in order to:

- monitor road collision investigation capability
- the number of criminal prosecutions related to road traffic deaths and injuries
- the standard of services for crash victims.

The International Road Victims' Partnership (IRVP) has produced a guide for organisations to help them write their own guide for families bereaved by road traffic crashes.

CHECKLIST		
Is there a Good Samaritan law in your country?	Yes	No
Are health care workers bound by Duty to Care laws?	Yes	No
Does every vehicle driver require third-party insurance?	Yes	No
Is crash investigation undertaken in your country?	Yes	No

3.10. Strategic planning and coordination

Effective post-crash response requires collaboration between many different government departments, emergency services, national and community health providers, fleet and equipment managers, training institutions and even individual volunteers. Good coordination, planning and communication are vital to ensure good outcomes.

Provision for post-crash care should be part of any national, regional and local road safety strategies. It is an important consideration for:

- road design and planning – is there adequate access and provision for emergency services?
- fleet management – are drivers trained in the essentials of first aid and equipped with first aid kits?
- regional planning – are emergency services located, coordinated, equipped and prepared to handle casualties on dangerous roads away from urban areas?

It is advisable to have a national, multi-agency strategic plan for post-crash response to guide the development and operation of services.

The importance of data

The effective deployment of post-crash emergency services depends upon good data. Essential data include:

- information on road crashes, their locations and times
- information about the road crash victims, for example age, sex, road use, and so on
- detailed incident data
- information on outcomes for those injured at each stage – pre-hospital, hospital and rehabilitation.

Data are vital for actions to prevent future road crashes occurring and helping to identify crash risks. Data are used for planning the location and equipment of emergency services, and to ensure resources are deployed where they are needed. Data may identify the need for local community responders and also their effectiveness. Data are also important for improving emergency procedures and practices.

Data should be recorded by each emergency service involved at the crash scene:

- Police must collect and record basic information on the circumstances of the crash, based on standardised data collection methods and collision forms. Ideally, global positioning system (GPS) technology should be used to record exact locations.

- Ambulance personnel must record data on patient symptoms and type of care provided.
- Fire and emergency rescue crew must collect data on dangerous hazards and interventions made.

For each patient, a patient care record should be able to answer basic questions before arrival at a treatment facility. These are based on the international classification of external causes of injury and the WHO Injury Surveillance Guidelines.

Specialised training is needed for emergency services personnel to ensure data are accurate and collected in a uniform way.

While personal data must be protected and withheld, information on road crashes and their outcomes should be shared between all stakeholders involved in post-crash delivery. Sharing data can identify gaps or issues that need to be addressed. It ensures the best development of post-crash services to save lives and prevent injuries.

Data collection

Basic information	Dataset
Who was injured?	Assignation of a unique number at the time of dispatch and a patient record number. Record details of ambulance and crew.
What caused the injury and what was done to treat it?	Factors that might be recorded include non-use of seat belts or helmets, the presence of drugs or alcohol. A clinical description of the injury and treatment is recorded.
When did the injury occur and what was the response time?	The time of the incident, arrival time of emergency medical services assistance, time of departure from scene and arrival time at a treatment facility.
Where did the injury occur?	GPS location data or the most accurate available location data.
How does the patient respond to treatment? (outcome)	Status of the patient on arrival at the facility and what happened to the patient that is admitted, discharged, died, and so on.

The WHO Data systems manual provides an excellent overview of how and what data should be collected following a road traffic crash.

Minimum data elements: overview

Crash-related	Road-related	Vehicle-related	Person-related
• Crash identifier (unique reference number assigned to the crash, usually by police) • Crash data • Crash time • Crash municipality/ place • Crash location • Crash type • Impact type • Weather conditions • Light conditions • Crash severity°	• Type of roadway* • Road functional class* • Speed limit* • Road obstacles • Road surface conditions* • Junction • Traffic control at junction* • Road curve* • Road segment grade*	• Vehicle number • Vehicle type† • Vehicle make† • Vehicle model† • Vehicle model year† • Engine size† • Vehicle special function† • Vehicle manoeuvre (what the vehicle was doing at the time of the crash)	• Person ID • Occupant's vehicle number • Pedestrian's linked vehicle number • Date of birth • Sex • Type of road user • Seating position • Injury severity • Safety equipment • Pedestrian manoeuvre • Alcohol use suspected • Alcohol test • Drug use • Driving licence issue date • Age°

° Derived or calculated from other data elements.

* Depending on the quality and detail of road inventory and hardware data available, it may be possible to obtain this data element through linkage to other databases.

† Depending on the quality and detail of a motor vehicle registration database, it may be possible to obtain this data element through linage to motor vehicle registration files.

Case study 5. **Road safety and resilience – Tajikistan**

Disaster resilience is the ability to deal with and recover from a wide range of threats to life and community. Road crashes are an "extended" disaster – sadly happening on a daily basis in many countries. Well-coordinated and equipped emergency services that can respond well to road crashes are also better able to respond to more acute emergencies, such as natural disasters.

Tajikistan is home to one of the world's highest and most treacherous roads, the Pamir Highway. The Pamir Mountains are an area of increasing tourism but extremely remote and therefore difficult for emergency services to access.

During the tourist season, the population in remote mountain areas is predominantly female, as many of the men are away working. A project supported by the UK Embassy in Tajikistan supported the training of women from rural areas along the Pamir Highway to gain rescue skills important for responding to road crashes and other emergencies. This included first aid and rope rescue training delivered by female firefighters from the London Fire Brigade. Alongside this training, UK fire and rescue services donated valuable rope rescue equipment to support the communities' on-going rescue work.

The project provided local women with the skills, tools and confidence to be able to rescue, extricate and stabilise a casualty before the emergency services reach the scene.

Coordination between services

Coordination and understanding between emergency services is essential for effective post-crash response. This ensures every responder knows their role and what to expect from others.

There should be joint planning between all services. That way, everyone shares the same strategy and goals. With joint training, all services work in harmony with agreed protocols and methods.

As noted, police, ambulance, fire and emergency services should agree on a single lead agency to manage the crash scene to avoid competition or conflict. Commanders from each agency should share information, so they can form and implement an agreed response plan. An agreed communications strategy is also important.

After serious incidents, there should be a joint debrief involving all services to review actions and identify improvements. This is not about finding blame, but honest conversations followed by actions to correct any problems. All services should regularly review and update their working practices and learn from incidents jointly.

The information collected at every crash is important for future planning. Good data ensures an accurate understanding of road risk and emergency services' needs. It helps direct resources where needed most – protecting the public and emergency responders too.

Inter-agency agreements

The best way to ensure effective cooperation is to sign inter-agency agreements and to agree and adopt joint protocols. Cooperation between emergency services should drive efficiencies, reduce duplication and direct resources where most needed. The aim is to deliver an improved service to the public with better outcomes for road victims.

Good practice is to have:

- A collaboration agreement – an official document setting out how the parties will work together in discharging their functions. Included in this agreement are:
  - > a description of the governance structures
  - > details of how the parties will work together
  - > anticipated benefits from collaboration.
- Agreed protocols define the specific roles of personnel from different agencies and how they will work together in different circumstances to deliver the best results. The protocols define who is in charge of the crash scene, depending on the severity and location of the crash. These instructions must be clear, accurate, practicable and known by all operational personnel.

Case study 6. **Coordination and joint working – the example of JESIP**

The Joint Emergency Services Interoperability Principle (JESIP) is a UK-based programme introduced in 2012, promoting the importance of good coordination and understanding between different emergency services for effective post-crash response. JESIP can be applied in any country.

The core principles of JESIP are:

- joint planning between all services, so that everyone shares the same strategy and goals
- joint training, so that all services work in harmony following the same methods
- agreed protocols, ensuring every responder knows what their role is and what to expect from others
- an agreed, single lead agency to manage the scene, so that different services do not compete with each other or waste time when carrying out tasks
- an agreed communications strategy: communications should be clear and should only relay facts, without making assumptions
- joint debriefing following serious incidents, involving all services to review actions taken and identify potential improvements.

Good coordination, communication, shared methods and goals are vital for effective post-crash response. They are also critical for the safety of emergency personnel.

Overseeing these agreements, a permanent inter-agency working group, consisting of different stakeholders' nominated employees, can ensure cohesion, consistency and shared learning across agencies. Best practice is to encourage other stakeholders – such as community representatives – to participate and to seek their views. This group can oversee the development and monitoring of strategic plans for post-crash response.

Service-specific training

Adequate training and equipment are essential for emergency responders to deliver the best outcome for the casualty and ensure their own safety.

Attending road crashes will only be one incident type that each agency will respond to. As such, some training and equipment choices may have to be suitable for a range of purposes and not only road crashes. There are also specific requirements for road crashes which need to be met.

- Police must be trained to evaluate the situation, ensure the safety of the crash scene, evaluate all hazards, protect bystanders and other road users, interview witnesses and collect relevant data. For serious incidents, police specialists must be able to conduct crash investigations. It is advisable for road police to have first aid training too.
- Fire and rescue personnel must be trained to evaluate and eliminate hazards and risks, stabilise vehicles, safely release trapped casualties, and clean up glass, oil or other debris.
- Ambulance personnel must be trained to assess the situation and state of casualties, ensure the safety of any walking injured, and provide necessary medical care. They take primary responsibility for field triage to categorise and prioritise casualties. They must be able to transport casualties safely, stabilise their condition and monitor their needs during the journey to a treatment facility.

It is important that even service-specific training is developed in conjunction with other services to ensure a team approach centred around the casualty. It is also important that each agency understands how its actions or omissions affect others: for example, ensuring that evidence is preserved and not unnecessarily damaged during operations.

While each service has its role, joint training exercises help ensure efficient working at the scene. Training together replicates the realities of real-life incidents. This helps services work with agreed terminology, methods and goals. Periodically, a full-scale multi-agency simulation exercise is also beneficial.

Auditing and reviewing needs

Information for assessing training and equipment needs comes from various sources, including:

- historic incident data
- predicted changes in demand (for example, new road layouts or more vehicles on the road)
- feedback from personnel
- review/debrief outcomes
- good practice and published standards.

Ongoing monitoring and evaluation will also ensure that the right equipment is in the right place at the right time.

Ultimately, it should be possible to map the casualty needs from the moment of a crash through to recovery and identify what is needed at each stage. This information should underpin both equipment and training needs, as well as which services are responsible and accountable. The goal is to ensure at least a minimum standard of care throughout the casualty experience.

Equipment procurement

Equipment procurement should be based on needs. The temptation to pay for unnecessary features should be avoided.

Where possible, joint procurement should be used to reduce costs (purchase and maintenance). This may involve collaboration within different parts of a single service or between the emergency services.

It is useful to consider the whole lifetime cost. An item that initially appears cheap may be less so when training, certification and maintenance costs are included. If these costs have not been allowed for in future budgets, it can lead to equipment becoming unsafe or unused.

The availability of spare parts and secure, weather proof storage is also vital. Even equipment provided by donors can end up wasted if these are not provided for.

Consideration should be given to how specialist equipment for one service will work with other services. Incompatible equipment creates additional costs and reduces operational capability. Compatible equipment enhances the overall resilience of the emergency service by allowing for tactical movement of items where required. Training costs are also reduced.

Case study 7. **Dealing with congestion**

In urban areas with a high-density population and at times severe traffic congestion, it can be hard for ambulances and other emergency responders to reach road crash victims. In Lebanon, the Live Lebanon project supported by the United Nations Development Programme (UNDP) has deployed motorcycles as two-wheeled rapid responders. These "moto ambulances", equipped with first aid kits and trained paramedics, can get through traffic and reach victims quickly to stabilise their condition until other help arrives.

The REVIVE project in Europe is promoting the use of emergency corridors to clear congested roads to allow emergency vehicles to pass. This system relies on rules for drivers to pull over in a systematic way. An evaluation of these emergency corridors has found up to a 40 per cent improvement in the survival of road victims.

Watch a video about emergency corridors here.

Maintenance

Equipment should be maintained in accordance with the supplier's guidance. Maintenance arrangements should include both planned work and the ability to address emergency or ad hoc issues. Reducing the period during which the equipment is out of service can be achieved through the availability of spare units or efficient support arrangements.

Personal protective equipment

Emergency responders often work in dangerous locations and during poor visibility. Each person requires high-visibility PPE to ensure their safety. For example, firefighters need fire-retardant uniforms. Sometimes, protection against hazardous materials or contagions is also needed. Where possible, PPE should be personal and marked with the person's details.

Appropriate arrangements are also required for laundering and repairs. A spare stock of PPE should be provided so that operational cover is not affected.

Debriefing and review

Even at a local level, informal and formal debriefs offer the opportunity for services to identify equipment and training needs. It is important to create an environment for open discussion without fear of blame. This way, underlying human factors as well as procedural or equipment-related issues can be identified. These issues can be very influential on performance and working arrangements.

Within the emergency services, each unit should appoint a lead instructor responsible for training, inter-service liaison and coordination. This person should keep training records for every emergency worker in their service.

4. Conclusion

Effective post-crash emergency response could greatly reduce road fatalities, particularly in low- and middle-income countries. Good post-crash emergency response depends on strategic planning and investment, good coordination, communication, equipment and training.

This toolkit is designed as an overview of basic best practice in post-crash response. Its goal has been to identify areas for improving post-crash services across different agencies and stakeholders. There is one key aim shared by all: to secure the best outcomes for road casualties.

5. Toolkit animations

These animated videos have been created to accompany the toolkit. They are intended as a starting point for dialogue and discussion.

- emergency response
- good communication and dispatch
- intervention at the scene
- caring for victims
- coordination and data collection
- equipment and training.

6. Resource repository

Websites

ERSO Post-impact care

WHO Emergency and essential surgical care

WHO Emergency care programme

WHO Global Alliance for Care of the Injured (GACI)

WHO Guidelines for essential trauma care

WHO-ICRC Basic Emergency Care: approach to the acutely ill and injured

WHO International registry for trauma and emergency care

WHO Post-crash response: Supporting those affected by road traffic crashes

WHO Trauma Care Checklist

Videos and animations

The Safe System

Vision Zero – Safety at every turn

WHO: Save LIVES Road Safety Technical Package: Survival after a crash

Infographics

Save LIVES – Survival after a crash

7. References

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