After the earthquake: Rebuilding the blood program with Nepal Red Cross
Challenge

On 25 April 2015, a devastating 7.8 magnitude earthquake struck Nepal, causing widespread destruction and impacting the lives of eight million people – placing their national blood program at risk during a critical time of need.

Nepal faced an immediate demand on the blood supply with thousands of people injured and hundreds of thousands displaced. This was coupled with the loss of blood program facilities and equipment damage in the capital and across regional districts.

Several Nepal Red Cross Society blood transfusion service (NRCS BTS) facilities were impacted including Kathmandu Central Blood Transfusion Service and the regional and district centres in Bhaktapur, Gorkha, Pokhara, Kavre, Dharding, Nuwakot and Sindhupalchok.

Blood service essential operations were at risk, in terms of safety and availability of the blood supply; this would be further challenged by the coming monsoon season.

The immediate challenge was backed up by the longer term recovery efforts to rebuild and repair damaged facilities for blood collection and processing, requiring specialist technical and quality assurance expertise.

| 7.8 magnitude earthquake affecting 1/3 population | 31 out of 75 districts impacted |
| 22,303 people injured 8,896 lives lost | 700,000 people displaced |
| 604,930 houses destroyed | 90% of healthcare facilities outside main cities non-functional |

Earthquake general impact in Nepal (IFRC); Kathmandu- a densely populated city
Who is the Global Advisory Panel?

GAP is a global network of Red Cross / Red Crescent blood services with expertise in risk management and corporate governance of blood programs.

We work in partnership with the International Federation of Red Cross and Red Crescent Societies (IFRC) to advocate and support the establishment of safe and sustainable National Society blood programs, promote the adoption of best practice, and facilitate resource mobilisation and knowledge transfer between blood services. This purpose is outlined in the IFRC Blood Policy.

**GAP has a specialist role to provide coordination assistance to National Society blood services in rebuilding and recovering their blood program following a disaster event. This support is provided in coordination with Partner National Societies (PNS) and includes short-term assistance, as well as long term recovery and sustainability.**

GAP is recognised as a trusted and credible support partner providing customised and timely advice, specialist expertise and resources to support country blood programs. GAP’s support programs operate at global, regional and individual country level.

You can find out more about our activities and programs on our website: globaladvisorypanel.org
Approach

With a role in providing post-disaster support to Red Cross and Red Crescent blood services, and with a long standing relationship with Nepal Red Cross Society Blood Transfusion Service, GAP was able to quickly respond during the post-earthquake recovery effort.

A GAP team travelled to Nepal to directly assess the impact on facilities, operations and the blood supply. We then worked with Partner National Societies (PNS) to collectively build a proposal to support Nepal’s blood program recovery.

Four-part framework for recovery
Together with partners, GAP established a recovery support matrix, a defined scope of activities and deliverables, and a framework for the blood program recovery across four major areas:

1. **Project coordination**: Specialist advice and technical coordination assistance to the NRCS and project partners for all project elements.
2. **Infrastructure rebuild or repair**: Technical advice for the design and construction or repair of blood centre facilities.
3. **Critical equipment support**: Recommendations, specifications and procurement of critical blood service equipment.
4. **Capacity development**: Resourcing, technical advice and capacity building through training to local NRCS BTS staff.
**Who was involved?**

GAP’s global network of National Society partners came together to help NRCS to ensure a safe and sustainable blood supply for the people of Nepal.

**Nepal Red Cross Society Blood Transfusion Service**
Nepal’s primary national blood program, with blood centres established in 108 locations within 73 districts of the country, and providing more than 4 million units of blood and blood components to patients in need.

**Nepal Red Cross Society**
Nepal’s largest humanitarian organisation, committed to humanitarian aid for 30 million people across the 77 districts in Nepal. This work includes disaster management, first aid, organisational development, gender equality and social inclusion.

**Global Advisory Panel**
Expert advisory organisation for National Society blood programs, as an affiliate of International Federation of Red Cross and Red Crescent Societies (IFRC). GAP members are National Society experts in blood programs from around the globe.

**Partner National Societies**
Dedicated funding and expert support for recovery program deliverables:
- Australian Red Cross
- Belgian Red Cross
- British Red Cross
- Finnish Red Cross
- Japanese Red Cross
- Thai Red Cross

Note: American Red Cross provided considerable blood program support to NRCS and managed these projects separately. GAP provided advisory assistance for this in the initial stages of building design/conception only.
Framework 1: Project coordination

When multiple partners are involved in the relief effort following a major disaster, it is critical to coordinate activities for effective recovery and to help build-in future resilience.

GAP worked closely with partners, leveraging the individual capacities and expertise of each partner, and combining these into a recovery needs matrix to maximise the available support and benefit for the NRCS blood program. Through this coordination approach, partners without experience in blood were able to effectively support the recovery effort by partnering with GAP to provide the relevant technical input and advice.

GAP's project coordination model covered three key areas:
- **Project**: Design, tools, implementation and project outputs.
- **Sustainability and local ownership**: Transition from project to local operations.
- **Local system**: Mitigation of local risks and building future resilience

The aim of this model is to ensure sustainable outcomes are achieved, and that project challenges are addressed taking into consideration the local context of Nepal. GAP coordinated closely with NRCS and partners throughout the project to ensure accountability, transparency, ongoing communication and project partner alignment.

Project management and technical expertise was provided to assist the impacted blood service sites in Nepal with: national blood network development; blood centre facility design; quality assurance practices; new and retrofitted blood centres and equipment; technical guidance for PNS capacity-building programs.

*Funded by Australian Red Cross Society*
Results

Through the extraordinary commitment and coordination of multiple Partner National Societies, the NRCS blood program was re-established and significantly improved.

Framework 2 and 3: Infrastructure and equipment

With Partner National Society funding and support, the damaged blood bank facilities were repaired or rebuilt to a higher standard, and critical equipment replaced and upgraded.

Central Blood Transfusion Service (CBTS)
The CBTS in Kathmandu was critically damaged and required rebuilding. Blood service operations were relocated to the Emergency Blood Bank (EBB) facility in Balkumari, and later to a larger, purpose-built temporary facility within the NRCS Headquarters in Kalimati, while the new major CBTS facility was built.

Infrastructure:
- Renovated and expanded donor collection area and laboratories at EBB Balkumari.
- Temporary CBTS facility built and established at NRCS headquarters.
- Reconstruction of CBTS facility with significantly improved infrastructure and future capacity.
- Supported the Independent External Quality Assurance (IEQA) to oversee CBTS construction.
- Facility planning and Good Manufacturing Practice (GMP) workflow design recommendations.
- Construction updates.

Funded by Thai Red Cross Society

Thai RCS and GAP inspect construction of NRCS CBTS in Kathmandu; NRCS CBTS construction progress, Temporary blood service facility at Kalimati
**Bhaktapur District Chapter**

Bhaktapur is a key strategic manufacturing hub which not only provides blood for the district but also supports Kathmandu with blood inventory. The blood bank was significantly damaged by the earthquake and required rebuilding. While the blood bank was being repaired, operations moved to a temporary shipping container facility at the local District Chapter.

**Infrastructure:**
- Repair and retrofit facility, increasing blood bank floor space by 100%.
- Strengthening of the existing structure to ensure future earthquake resilience.
- Facility planning and GMP workflow design recommendations.
- Technical advice and recommendations for equipment placement to ensure blood bank met minimum international standards and guidelines.
- Facilitation relocation support recommendations.
- Construction updates.

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**Critical equipment support:**
- Essential critical materials (blood bags) during initial phase of recovery.
- Development of critical equipment requirements and specifications.
- Procurement of critical equipment.
- GMP design and equipment placement recommendations in line with international minimum standards.
- Delivery, installation and remote validation support.

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Funded by British Red Cross Society

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Funded by Japanese Red Cross Society
Gorkha District Chapter
The earthquake-damaged Gorkha blood bank facility was permanently relocated to a larger and more appropriate site at the local district education building, enabling further upgrades to the space and workflow.

Infrastructure:
- Facility planning and GMP workflow design recommendations.
- Technical advice and recommendations for equipment placement to ensure blood bank met minimum international standards and guidelines.
- Facility relocation support and recommendations (such as adequate bio-hazard waste management and security access).

Critical equipment support:
- Development of critical equipment requirements and specifications.
- Procurement of critical equipment.
- GMP design and equipment placement recommendations in line with international minimum standards.
- Delivery of all equipment items; installation and onsite validation of delivered items; and reports for installation, operation and performance qualification (IOPQ) completed.

Funded by Belgian Red Cross Society
Framework 4: Capacity development

This part of the Nepal recovery project framework was delivered across three areas:

1. Donor collection

Blood donation experts from the Finnish Red Cross Blood Service (FRC-BS) developed an evidence-based technical training program targeted to areas requiring most support to improve quality and consistency of the blood donation process for the NRCS BTS.

Working with local experts and staff in Nepal, and in coordination with GAP, the training was delivered through in-country workshops.

The training focused on the sustainability of implementation. FRC-BS identified the long-term needs and goals of the NRCS, built a high level of trust and respect with local blood donor collection staff, and then supported their professional development by outlining quality aspects of the vein-to-vein process.

Training covered the following areas:
- Donor’s perspective – donor safety, prevention of adverse events, donor care and counselling, haemoglobin measurement, health questionnaire, eligibility criteria.
- Staff and safety perspective – hygiene and safety in blood donation, staff safety, sharps disposal, gloves, disinfection.
- Patient perspective – quality of the blood collection process.

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Funded by Finnish Red Cross Blood Service
2. Local staff in Nepal

Acknowledging the significant impact that local factors can have on the success and sustainability of a project, GAP identified that dedicated local liaison staff were essential for the implementation of project activities and ongoing future sustainability.

The resourcing for this local staffing was designed specifically to avoid placing a resource burden on the NRCS blood program operations throughout the project time-frame.

This led to funding two new roles for local NRCS scientific officers over 2 years. The officers could directly assist with the post-earthquake project deliverables and BTS operations while also providing liaison support at the local level for both GAP and PNS delegates.

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Funded by Australian Red Cross Society

3. Haemovigilance

Japanese Red Cross supported NRCS BTS with the development and implementation of a system for surveilling procedures across the entire blood transfusion service chain from donation, processing, transfusion and to patient follow-up (called a haemovigilance system).

This included training to improve mechanisms for both reporting adverse clinical events in transfusion and hospital monitoring, and also in assisting NRCS BTS to liaise with hospitals and National Public Health Laboratories for sample testing.

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Funded by Japanese Red Cross Society
Local blood transfusion service operations were rebuilt, repaired and re-established, with considerable achievements in upgrading facilities along the way.

Blood program technical capacity was enhanced through specialised training of staff, and by implementing systems to ensure minimum international standards were met.

The project outcomes have significantly improved the facilities, operations and capabilities of the NRCS Blood Transfusion Service, leading to an overall improvement in the quality and safety of blood and blood products for the local population of Nepal.

The long-term relief effort required for this project was achieved through a well planned and coordinated program of activities, supported by the expertise and assistance from Partner National Societies.

The effective transition from project phase to local ownership is a critical success factor for ongoing sustainability and has positive impacts for long term future development. To ensure this, NRCS BTS were provided with a Project Transition and Sustainability Plan, developed by GAP in consultation with all PNS. This document outlines the ongoing maintenance for all project support elements to ensure sustainability, and includes prioritised recommendations to assist with future planning strategies.

A strengthened, resilient blood program for Nepal – achieved through the collective effort of Nepal Red Cross, project partners and GAP