

Introduction

Every year thousands of people are trained in first aid around the world. The Red Cross is the main provider of this training, and first aid lies at the heart of the Red Cross movement.

In 2005, Belgian Red Cross-Flanders spearheaded an initiative (EFAM, European First Aid Manual), together with a group of European experts, to update training for basic first responders according to the latest medical and scientific data. This was done using evidence-based methodology to identify effective interventions and interventions that were dated, ineffective or even harmful. This led to the publication of validated European first aid guidelines ^[1] and the European First Aid Manual (www.efam.be). So far, more than thirty organisations have a licence to use EFAM as the basis for their first aid courses, meaning in effect that EFAM is also harmonising first aid training across Europe.

Several African Red Cross National Societies expressed the need for first aid materials adapted to the African context. In addition the World Bank advocates training basic first responders in how to respond to medical emergencies as a low-cost opportunity that can decrease the burden of disease and injury in Sub-Saharan Africa ^[2]. Such training can lead to reduced delays in recognising danger signs and seeking medical help, and to improved provision of help in the absence or anticipation of medical care ^[3;4]. The distinct African burden of disease and injury, the limited access to formal healthcare, the strong embeddedness of cultural remedies, and poverty all call for specific first aid guidelines.

To date, we know of no single evidence-based reference that comprehensively addresses how basic first responders should be trained to manage emergency situations in an African context. This led us to a project to use the EFAM experience to help develop evidence-based first aid guidelines and materials specifically directed at the African context.

The purpose of this project is to help decrease the burden of disease and injuries for Sub-Saharan Africa countries. Our objective is to develop guidelines on the content of first aid training programmes for basic first responders in Sub-Saharan Africa. The guidelines are intended to provide guidance and support to those responsible for first aid programmes. We define first aid as ‘appropriate and beneficial help to a suddenly ill or injured person which is initiated as soon as possible and continued until that person has recovered or medical care is available’. This guideline assumes first aid requiring minimal or no equipment.

Because of the major importance of prevention in health care and because first aid recommendations are often linked to prevention advice, we also complemented AFAM with prevention recommendations. Preventive measures can reduce both fatal and non-fatal injuries and diseases and the implementation of prevention strategies of proven efficacy is of major public health importance (EuroSafe, European Association for Injury Prevention and Safety Promotion). Preventive measures are cost effective, and the benefits of preventing injuries often outweigh the cost of safety measures by up to 10 times (EuroSafe). The preventive recommendations in AFAM aim to prevent injuries and diseases, specifically for Sub-Saharan Africa, and can be used in addition to the first aid guidelines described in AFAM.

Since evidence-based reviews with relevance for low and middle income countries are few and far between, ^[5] this opens up possibilities to learn about successful practices that make the best of limited resources ^[6]. These new guidelines will be the basis of a flexible didactic materials kit that will be available to those responsible for first aid training programmes in Africa. The didactic materials kit comes on a DVD which provides texts and hundreds of quality African illustrations depicting youths, adults and elderly people from multiple ethnic and religious backgrounds. The text is available in English, French and Portuguese. An implementation guide is available to assist those responsible for first aid programmes.

Methodology

Methods to develop guidelines need to be rigorous and transparent. This is especially important so that the guidelines are not subject to potential biases of guideline development and that users have confidence in its validity. However, formal guideline development methods often require a lot of time and resources and two-year projects are common ^[7]. Practical concerns about the sustainability of such time- and resource-consuming guideline development methods have been raised ^[8] and made us use a more pragmatic development process.

Guideline expert panel

We composed a multidisciplinary expert panel of 10 African experts, including five specialists and five representatives of African Red Cross societies. Specialists had expertise in evidence-based medicine and primary care or emergency medicine and came from countries in Sub-Saharan Africa. Representatives of African Red Cross societies included managers and first aid trainers. An expert in medical anthropology also participated in the panel. Two experienced reviewers participated in developing the evidence profiles. The co-director of the South-African Cochrane Centre chaired the panel.

Formulating key questions

Based on published injury and disease statistics for Sub-Saharan Africa ^[9;10], we selected the most critical topics with relevance for first aid. The reviewers proposed a list of topics to the chair, who decided on the final scope:

- **Injuries:** severe bleeding; nose bleed; cuts and grazes; human or animal bite wounds; bee or wasp stings; spider, scorpion or snake bites; penetrating wounds; burns; eye wounds; broken bones; injuries to muscles and tendons; head injuries; spinal injuries; poisoning.
- **Communicable conditions:** fever; malaria; pneumonia; measles; diarrhoea.
- **Non-communicable conditions:** choking; unconsciousness; cardiac arrest; heart infarction; stroke; epilepsy; alcohol withdrawal delirium.
- **Maternal conditions:** emergency childbirth.

In relation to the emergency situations included, we subsequently formulated key questions to be addressed. A first key question dealt with the effectiveness and feasibility of first aid procedures for the selected emergency situations. We subdivided this question for each emergency into a) initial assessment, b) management, c) criteria for seeking medical help. A second question dealt with African cultural remedies and preferences in relation to the included emergency situations.

As the preventive recommendations were intended to complement the African First Aid Materials, we based the selection of topics on the topics selected for AFAM. Because AFAM is focused on first aid, we only included prevention recommendations based on interventions with a potential immediate effect to complement the first aid recommendations. For the topics ‘stroke’, ‘cardiac arrest’ and ‘heart infarction’ we know of no single preventive interventions with a direct result, and therefore we did not complement these topics with prevention advice.

For each topic included in the AFAM prevention project, we formulated three key questions:

- What is the effectiveness and feasibility of preventive interventions?
- What are the major risk factors of public health importance?
- What are the African perspectives?

Systematic review

We used a stepwise approach to identify the evidence following the hierarchy of study designs. This means that we searched for guidelines, systematic reviews, intervention studies and prospective observational studies in descending order. If we found an eligible study from a higher evidence level, the following step focused only on studies from a lower evidence level published thereafter. We only searched for prospective observational studies in case no other evidence was found. The search strategy can be found in appendix 1 and appendix 2 for first aid and prevention, respectively.

We used the quality criteria of the Cochrane Effective Practice and Organisation of Care Review Group ^[11] for intervention studies, the quality criteria of the Dutch Cochrane Centre for cohort studies ^[12], and Quadas for diagnostic studies ^[13].

Overall we screened around 35,000 references and selected 282 publications, including 143 publications for the first aid guidelines and 139 publications for the prevention guidelines.

We did not perform a systematic review for cardiopulmonary resuscitation and choking, because recent evidence-based guidelines with instructions for first responders are available ^[14;15].

Data synthesis

We extracted data on methodology, participants, intervention, comparison, and outcomes and tabulated evidence profiles. Draft recommendations and didactic material were prepared before the meeting of the guideline development group. We graded the quality of evidence and strength of recommendations in accordance with the GRADE system ^[16]. The GRADEprofiler system facilitated the determination of the quality of evidence.

GRADE divides the quality of evidence into either:

- **High** = further research is very unlikely to change our confidence in the estimate of effect.
- **Moderate** = further research is likely to have a significant impact on our confidence in the estimate of effect and may change the estimate.
- **Low** = further research is very likely to have a significant impact on our confidence in the estimate of effect and is likely to change the estimate.
- **Very low** = any estimate of effect is very uncertain.

Within the guideline, the letters A, B, C, or D summarise high, moderate, low or very low quality of evidence respectively. The strength of the recommendation is influenced by the benefits and harms, quality of evidence, applicability, and preferences of the population ^[17]. A strong recommendation means 'do it', as most people in that situation would want or should receive the recommended action. A weak recommendation means 'probably do it', as there is some uncertainty regarding the most appropriate action and different choices may be appropriate. If no relevant research evidence was found, the panel based the recommendations on what is considered good practice. In that case no grade of recommendation is given.

Panel meeting

We organised a one-day introductory panel meeting to present the draft recommendations and didactical material, and to clarify the evidence-based methods and consensus procedures. During a two-day consensus meeting, the panel discussed each first aid recommendation until they reached agreement. In a third meeting the panel discussed the evidence about prevention and we added preventive recommendations to the first aid recommendations.

Consultations

We invited peer reviewers including medical specialists in emergency medicine, traumatology, paediatrics, and gynaecology to give feedback on each first aid guideline statement and on the draft of the didactical material. For the prevention advice, we consulted peer reviewers with expertise in injury prevention and health promotion. The chair of the guideline development panel then considered the responses.

Pilot test

We organised a pilot test of the training materials in Uganda and Swaziland to get the perspectives of Africans on AFAM. This pilot included focus group discussions on whether the illustrations were understood when presented without further explanation to evaluate clarity, and field-testing the skills learned after training with AFAM to evaluate the feasibility of more complex guidelines.

Internal validation

The final version of the guidelines and the didactical material was circulated electronically and approved by the panel members.

Guideline update

These guidelines will be updated by 2015.