Overview

This meeting was co-convened by WHO and the International Committee of the Red Cross.

The primary objectives of the meeting included: 1) discussion of the current science of triage, including pre-hospital and facility-based triage during both routine operations and extraordinary/surge situations, 2) a review of existing triage tools, and 3) development of a consensus-based triage framework for both routine operations and surge situations.

Following several plenary sessions on the current state of triage science, the group split into workgroups addressing prehospital triage, field and facility-based triage during surge, and routine facility-based triage. Each group developed context-specific classification criteria and associated actions by triage tier. The plenary group then reconvened to review the candidate classifications and develop consensus for each scenario.

The primary output of the meeting was a set of candidate tools that provide a framework for triage in prehospital and facility settings, during both routine and surge situations. Going forward, the tools will be reviewed and ratified via regional and international consultations. A triage manual will be developed to support administrators and system planners to strengthen and improve the quality of emergency care delivery via implementation of standardized triage.
Opening

Welcoming remarks were offered by T. Reynolds and H. Veen. The project background and meeting goals were reviewed.

Introductions, Background, and Review of Agenda

Participants introduced themselves and described their experience with triage systems. H. Veen described the background of the initiative, while an introductory presentation by T. Reynolds highlighted the challenges of defining triage across different contexts. The proposed agenda was reviewed and discussed, and there was agreement to proceed via the proposed workgroup structure.

Review of Triage Practices

ICRC

N. Olim discussed the current ICRC perspective on triage, which is heavily influenced by the fact that the ICRC spends much of its time working in conflict zones and must be prepared to respond to a sudden surge in patient volume. He emphasized the importance of a triage tool that allows for a seamless transition between routine operations and surge conditions, especially in a limited-resource setting. He spoke to the importance of limiting patient flow through the Emergency Department (ED) during a surge situation, maintaining this area for initial assessment of critically ill patients and life-saving procedures. He reviewed the rationale behind the current ICRC schema, which places the initial triage point outside the ED during surge. He reiterated that ICRC is committed to supporting the development and dissemination of an interagency tool via this meeting process.

South African Triage Scale (SATS)

L. Wallis discussed the development and launch of SATS, with a focus on the rationale and challenges associated with shifting from a 3-tier to a 4-tier system. He noted that while there is limited evidence supporting the use of 5-tier tools in high-resource settings, the function of the 5th tier is highly variable and dependent on system-specific considerations. Evidence for the validity and impact of SATS in resource-limited settings was also presented, with outcomes including reduced wait times and overall mortality, as well as ease of use by entry-level nurses. SATS has since been modified or adapted into several other countries and is also the standard triage algorithm used by Medecins Sans Frontieres, and he noted that the upcoming review and revision of SATS would be able to incorporate the outputs of this meeting and align with a 4-tier version of the consensus tool.

Triage Practices in Low-Resource Settings: Experience from Tanzania

H. Sawe discussed triage practices in lower-resource settings, drawing from his experiences in Tanzania. He discussed several challenges to triage in this setting, including a lack of a dedicated triage area, the predominance of an informal “visual triage” with no formal guidelines, and a mismatch between the providers who may be trained in triage (physicians and nurses) and those who actually perform triage in most facilities (eg, health attendants). In discussion, he also emphasized the need for a consistent approach to triage in the emergency unit, and described experiences with facilities that reported ‘using ETAT,’ when it was used only intermittently and exclusively in the inpatient setting. He reiterated the importance of triage in the emergency unit, the ‘front door’ of the hospital. He noted that WHO tools generally have high acceptability in his working environment, and that generating a standard tool that is applicable to the low-resource setting emergency unit, and consistent with existing WHO guidance, would be an effective approach.
Military Perspective
S. Horne reported on current perspectives on triage in military settings. He discussed several tools currently in use, each with their own strengths and weaknesses, and emphasized that there is inadequate evidence to establish the efficacy of one tool over another at this time. In addition, he noted that most tools have been developed for and evaluated in high resource settings, limiting generalizability. He reiterated that any tool designed for use during surge should be aligned with routine triage practice to ensure a smooth transition in and out of surge protocol. Dr. Horne also noted that any transition to a new triage tool is associated with costs, financial and other (including training, changes in organizational structure, and process changes). These costs should be taken into consideration when deciding to use a new tool, and minimized by keeping any new tool, as well as the training and resources required for and its implementation, as simple as possible.

IFEM Global Triage Survey
M. Bullard reviewed limited preliminary results from the International Federation of Emergency Medicine (IFEM) Global Triage Survey, in which a 7-point Likert scale was used to assess providers’ attitudes towards triage. There was strong agreement among this group of respondents on the importance of triage in emergency units, and respondents rated their agreement with statements on a range of qualities that potentially contribute to effective triage. IFEM will follow up with updated results as the survey is rolled out across a broader range of respondents.

Prehospital triage Systems
S. De Vries presented on pre-hospital triage, highlighting his experiences in South Africa and experiences with pre-hospital implementation of SATS. In discussing triage more generally, he emphasized that a good triage tool must do the greatest good for the greatest numbers, be reproducible and be generally acceptable, and that prehospital tools should be compatible with those used by healthcare facilities. He also highlighted the idea that the “best” triage tool may not be perfect for the prehospital environment or every day facility-based care, but should work well in both settings, as well as during a disaster. It is also important that the triage process be routinely reviewed and audited to ensure acceptable performance.

WHO Emergency Triage Assessment and Treatment (ETAT)
S. Aboubaker presented an overview on the development of the WHO ETAT. She described the results of prior multi-country baseline assessments that documented many gaps-- the lack of triage in facilities, high case fatalities, delays in receiving treatment, lack of clinical guidelines, lack of basic resuscitation for severely ill children, and poor management of common childhood illnesses—and established the need for a coordinated approach to initial assessment of acutely ill children. The basic principles of ETAT as represented in Pocket Book of Hospital Care for Children were reviewed. There was discussion consensus that the content of this group’s triage recommendations for children would derive directly from the Pocket Book of Hospital Care for Children.

Discussion: Managing the Transition from Routine to Surge Triage
This discussion reviewed a range of issues relevant to transitions between routine and surge triage. There was agreement that the criteria for activating surge triage must be clearly defined and that an effective triage system should ensure a smooth transition. The group highlighted that the routine and surge triage systems cannot be disparate or too complex (even in high resource environments), and that routine and surge tools should be designed as an integrated strategy. In particular, there was agreement that the basic elements of an integrated triage strategy should be used on a daily basis, even in relatively low-volume settings, to ensure a smooth transition when needed in a surge scenario.
Elements that should be incorporated into criteria for triggering a surge protocol include: occurrence of mass casualty events, ICU bed capacity, operating theatre capacity, and other internal factors that affect a facility’s ability to tolerate an increase in patient volume. The development of a coordinated system for event notification was also discussed as an important component of the system, particularly in allowing for communication with relevant government agencies and other key stakeholders.

**Discussion: Preparing for Workgroups**

A review of the current literature on triage was discussed, highlighting the limited evidence base to support one triage method over others, especially in resource-limited settings and mass casualty events. Systematic reviews on existing triage tools were presented and made available for workgroup review.

There was general consensus that the meeting outputs should include a 3-tier tool, with designation of a clear framework and specific content to facilitate expansion to 4-tier tool. There was general agreement that the use of a fifth tier is likely too system-dependent and resource-intensive to be a part of current recommendations intended for a global audience.

There was consensus on the following recommendations on the use of colour-coding of triage categories:
- Red, Yellow and Green to designate high, moderate and low acuity categories, respectively.
- Orange (designating a classification between Red and Yellow) for potential expansion to a 4-tier system.
- Blue for the category of ‘Expectant’ to designate those beyond currently available curative treatment, but who may be re- triaged as additional resources become available. Blue/Expectant is a category used exclusively during surge.
- Grey for dead. There was discussion of social and political considerations around the choice of color used to designate the dead. Neither Black nor White would be acceptable in some regions. There was discussion of whether a combination of black and white (eg, patterns such as a white square with black border, stripes, checkerboard, or concentric circles) would be acceptable across regions as a global recommendation. There was final consensus to use Grey to represent the category, but to generally refer to the category in language as ‘Dead’ or ‘Deceased’ since, unlike the others, it is not a treatment or monitoring category.

**Workgroup Reports and Group Discussion**

**Prehospital**
The key themes discussed by this group included: 1) any tool must accurately and reliably identify the patient that needs transportation to urgent/specialized care, 2) the system used in the prehospital setting must reflect the structure/model used in the facility based service, 3) the tool must be adaptable and flexible enough to respond to the local context, and 4) the principles underlying the system must apply to everyday operations and be easily scalable during surge scenarios.

Discussion addressed the challenges of recognizing nuanced factors that may influence triage category or transport destination. For example, a high risk of decompensation en route should place a patient into a higher triage category, but recognizing this risk may require higher-level clinical skill than is consistently available. There was consensus that the manual should acknowledge that not all high-risk scenarios can be captured in a simple tool and should emphasize that a high-level of provider concern is sufficient for up-triage.
For determination of specific category parameters, the Prehospital group joined with the Facility (Routine) group and the section below reflects their combined consensus.

**Facility (Routine)**

The group endorsed the creation of a modular tool utilizing *Pocket Book of Hospital Care for Children* (HCC) criteria to triage children and those from WHO *Integrated Management of Adult/Adolescent Illness* (IMAI) for use in adolescents and adults. Overall, ‘emergency’ criteria would map to a red triage categorization, and ‘priority’ criteria to at least a yellow triage categorization. There was agreement that specific vital sign parameters and senior clinician concern should trigger “up-triage” to a higher-acuity category.

There was discussion of the need to include ‘event-based’ clinical scenarios (in addition to physiologic parameters and specific conditions) where reliance on physiologic parameters alone could fail to identify the need for time-dependent intervention. Examples include (but are not limited to) rabies exposure, ingestions, some chemical exposures, poly-trauma in a child, and trauma in the setting of a bleeding disorder. There was agreement on the need to include a short list of such event-based criteria explicitly in the tool.

The idea of including definitive time frames for evaluation of triage categories was also discussed. The consensus recommendation was to include general time targets without strict parameters (as strict parameters could lead to unintended consequences in environments where the time metrics could not be achieved).

The specific challenges of triage during a disease outbreak were also discussed and it was agreed that this topic would be addressed in a dedicated section of the manual.

A key area of discussion was how these outputs should account for the potential evolution from 3- to 4-tier triage algorithms. The value of introducing parameters for such expansion needs to be balanced against the potential for implementation and reliability challenges as complexity increases. A proposed solution was to include “pre-parceling” within the triage tool to indicate which elements would map to a fourth category, in order to allow for evolution to 4-tiers while maintaining consistency across systems.

A final key theme that was discussed was the importance of timely re-triage and reassessment. It was agreed that, at a minimum, the triage manual should call for the development of context-relevant parameters for reassessment intervals.

**Facility (Surge)**

The discussions in this group addressed site security, security check of the patient, decontamination, crowd control, and the need to keep children and caregivers together. During surge, the goal should be that only ABC assessment and management occur in the emergency department, with other care deferred to the OR, ICU, or ward. Another key area of discussion addressed the challenges of using vital signs to assign triage categories. While some of the classification criteria are vital sign based, it was agreed that not all patients would have vital signs prior to triage to a red area. There was also consensus that there should be vital sign based criteria that would block transfer out of the emergency unit, in order to identify individuals who may appear well but have isolated vital sign abnormalities suggesting potential for rapid decompensation. Consensus was reached regarding the use of respiratory rate, heart rate, and blood pressure, and to consider the use of oxygen saturation.

The issue of resource utilization for expectant patients was also discussed. Participants agreed that no attempt at resuscitation for cardiac arrest should be made if it draws personnel and resources away from
saving another patient. However, it was recognized that in certain instances there may be social and security considerations that also drive resuscitative efforts. A specific statement will likely be required on the topic of management of patients in presenting in cardiac arrest.

Field (Surge)
This group coordinated closely with the Facility (Surge) group and highlighted several key elements for a well-designed field surge triage system. For instance, the triage training requirements must be kept simple, such that triage could be conducted by a layperson with little medical knowledge, given the often critical role of non-medical personnel in this setting. In addition, triage systems at the facility and in the field, must be compatible and some form of the triage tool must be used in everyday routine practice to facilitate effective use during surge situations. There must also be clear distinctions for both prioritization for immediate treatment as well as transport of patients. The tool should include recommendations for regular re-assessment and potential for re-triage within specific time frames.

A question was raised on whether basic vital signs should be assessed onsite if time allows and resources become available. It was agreed that this should be considered in the setting of prolonged field time or if resources allow, but that complete vital signs would not be considered essential to initial field triage.

Specific vital sign parameters
Based on review of existing WHO clinical guidance, specific thresholds for respiratory rate, systolic blood pressure, heart rate, and oxygen saturation were determined for the “up-triage” of patients not meeting other high-acuity criteria. These same parameters will be used as the “block” parameters during surge to protect against inappropriate transfer to lower acuity areas after emergency unit assessment.

Expectant category
There was extensive discussion on the function and importance of the expectant category. It was agreed that Expectant is an important category during surge, both for its ability to identify patients who may be beyond available curative interventions, but still in need of other interventions; and because it allows for easy identification of those who should be a priority for re-triage, should additional treatment resources become available. One challenge of the expectant category is that its use must be informed by a higher-level knowledge of system resources, which may be beyond the scope of those actually performing the triage during a surge situation, especially in the out-of-hospital setting. Incorporating considerations from both the Field Surge and Pre-hospital group discussions, it was agreed that the use of the Expectant category would be limited to the Facility (Surge) tool, with the expectation that, upon arrival of advanced providers, a shift could be made to utilization of the Facility (Surge) tool in the out-of-hospital setting. This solution would: accommodate the limitations of initial field triage, limit the potential harm of inappropriate Expectant triage, simplify the Field (Surge) tool, and maintain the most effective field-to-facility continuity of designations during surge.

Universal out-of-hospital tool
Based on the discussions above (especially regarding the need for ‘soft’ transitions between routine to surge scenarios, and the importance of alignment across pre-hospital and facility-based triage systems at all times), as well as the substantial alignment across the classifications generated in the workgroups, there was consensus to create a single universal out-of-hospital tool. Out-of-hospital classification criteria were integrated and formulated to allow simple continuity with both the Facility (Routine) tool and the Facility (Surge) tools, while using criteria and language appropriate to the wider range of potential users in the out-of-hospital setting. The manual will explicitly address the possibility of transition to out-of-hospital use of the ‘facility’ tools, where more granular triage might be possible and useful (such as in systems with advanced pre-hospital providers, or in surge scenarios as additional resources become available).
**Agreement on outputs and final discussions**

Based on plenary discussions, there was agreement on the following outputs: a universal out-of-hospital tool; a tool for use at facilities during surge; and distinct pediatric and adult versions of a tool for use during routine facility triage. Specific classification parameters and categories were agreed.

Key topics were extracted from the meeting discussions as topics to be addressed in the manual and put before the group for review. There was group consensus that topics covered in the manual should include (but not be limited to):

1) Colour recommendations for triage categories
2) Classification elements [physiologic + categorical conditions + vulnerable populations] for triage tools
3) Distinction between routine and surge triage  
   a. Discussion of managing transition from routine to surge  
   b. Acknowledging that the reality in many countries experiencing prolonged conflict is a form of continuous surge with peaks
4) Contextualizing the category of expectant.
5) Consideration of country or region-specific mandates related to determination of death in the out-of-hospital context.
6) Location and physical environment of triage during routine and surge situations  
   a. What are the infrastructure needs for routine triage  
   b. Facility-based triage should be at the front door, not on the wards—important for the core meaning of triage  
   c. For surge, the location of triage should be shifted outside the emergency unit when necessary
7) Accounting for the dominance of injury presentations during many surge events
8) Special considerations during outbreaks
9) Importance of and parameters for timely re-triage and reassessment in certain contexts
10) Triage personnel  
    a. May have minimal training or be non-clinical personnel
11) Problematic uses of triage tools for processes that are not triage  
    a. Streaming  
    b. Resource planning  
    c. Diversion

**Closing and Way Forward**

T. Reynolds offered closing remarks, reviewing the goals and outputs of the meeting. She extended a heartfelt thanks to all participants for their contributions, and for their continued support of the review and finalization of the triage package going forward.

Next steps include:
1. Integration of specific HCC/ETAT and IMAI parameters
2. Formatting and dissemination to group for confirmation of candidate tools (workgroup products)
3. Parallel development of manual with writing group
4. Subsequent broader circulation of tools for peer review
5. Organizational representatives to investigate interest in and process for formal adoption/integration of these tools into their organization activities and standards.