

# Guidance for U.S. Centers for Disease Control and Prevention Staff for the Establishment and Management of Public Health Rapid Response Teams for Disease Outbreaks

Centers for Disease Control and Prevention

*May 2020*



CENTERS FOR DISEASE™  
CONTROL AND PREVENTION

# Table of Contents

Abbreviations .....	3
1 Introduction.....	4
2 RRT Establishment.....	7
2.1 Management Personnel .....	7
2.2 Financial and Administrative Considerations .....	8
2.3 Standard Operating Procedure Development.....	10
2.4 RRT Staffing .....	11
2.5 Roster Management.....	15
2.6 Responder Readiness .....	16
3 RRT Training.....	16
3.1.1 Orientation/Onboarding Training.....	17
3.1.2 Continuing Education .....	18
3.1.3 Exercises .....	18
3.1.4 Team Leadership Training .....	18
4 RRT Response .....	20
4.1 RRT Activation .....	20
4.2 RRT Composition for Deployment.....	20
4.3 Pre-Deployment Processes.....	21
4.4 RRT Deployment Processes .....	22
4.5 Post-Deployment Processes .....	25
5 RRT Monitoring and Evaluation.....	28
6 Conclusion .....	30
Appendix 1. Key Topics for Discussion .....	31
Appendix 2. Rapid Response Capacity Checklist .....	37
Appendix 3. Budgetary Considerations .....	39
Appendix 4. Rapid Response Team Member Profiles .....	40
Appendix 5. Rapid Response Team Training Topics .....	41
Acknowledgements .....	43
References .....	44

## **ABBREVIATIONS**

---

AAR	After Action Review
CDC	United States Centers for Disease Control and Prevention
EOC	Emergency Operations Center
GHSA	Global Health Security Agenda
IHR	International Health Regulations
IMS	Incident Management System
JEE	Joint External Evaluation
RRT	Rapid Response Team
SMS	Sent Small Message
SOP	Standard Operating Procedure

# 1 INTRODUCTION

---

The International Health Regulations (IHR 2005) dictate the need for countries to establish disease outbreak capacity including the ability to rapidly respond (1). Public health rapid response teams (RRTs) are multidisciplinary teams, trained and equipped, to rapidly deploy to a public health emergency in coordination with a larger emergency response framework. Utilizing an interdisciplinary approach, RRTs can be a key asset within a country's public health emergency response system and can be used throughout all stages of an outbreak response.

Although historically RRTs or their equivalents have been used in outbreak response, there has been no documented systematic and standardized approach to the establishment and management of RRTs for disease outbreaks to maximize their utility in an emergency (2-6). Additionally, RRT challenges concerning multidisciplinary staffing, roster management, training, and standard operating procedure (SOP) development have led to critical delays in outbreak response. Thus, underscoring the vital need for RRT preemptive planning to ensure rapid and effective outbreak response strategies (6). This document provides guidance to maximize the efficiency and effectiveness of multidisciplinary RRT operations during an outbreak response by outlining select mechanisms and processes for RRT establishment and management. Further, this document highlights the extensive nature of the processes requisite for setting up and maintaining a functional, trained and ready-to-deploy RRT workforce. As countries seek to develop and more formally institute their emergency response capacity under global initiatives, such as the Global Health Security Agenda and voluntary Joint External Evaluations, this document aims to provide standardized guidance to United States Centers for Disease Control and Prevention (CDC) staff providing technical assistance for RRT capacity development (7-9).

## 1.1 USE OF THE DOCUMENT

This document provides general guidance for CDC staff assisting countries with the development and management of a multidisciplinary RRT for outbreak response. CDC staff should adapt this guidance according to a country's and/or organization's context, needs, and existing resources. Whenever possible, this guidance should be used to strengthen the existing response system rather than introduce new components.

We encourage the use of the "*Key Topics for Discussion*" blue boxes, located throughout this document, to facilitate the development of a country specific RRT manual tailored to the country's emergency operational context and compiled for ease of reference in [Appendix 1. Key Topics for Discussion](#). Additionally, to support the identification of gaps in current RRT capacity, [Appendix 2. Rapid Response Capacity Checklist](#) can be used as an assessment tool. Participation of key decision makers and stakeholders is strongly encouraged throughout this process. Further, we encourage the use of the "*Maintenance Alert*" bubbles, located throughout this document, for considerations and suggestions on how to maintain an RRT after establishment.


As outbreaks vary, guidance for specific disease outbreak processes supersedes the general RRT guidance provided in this document. The examples included in this document are illustrative in nature and should not be considered determinant or exhaustive. Questions regarding this document and requests for additional guidance can be directed to [RRT@cdc.gov](mailto:RRT@cdc.gov).


## 1.2 CONCEPT OF THE RRT


For the purpose of this document, an RRT is defined as multidisciplinary team, trained and equipped, with the capacity to deploy rapidly to efficiently and effectively respond to a public health emergency in coordination with other response efforts. The RRT member composition, as presented in this document, is intended to be flexible and responsive to evolving outbreak response needs and includes RRT individual member deployments as well as


deployments as a team. Ideally, RRTs utilize an interdisciplinary approach and their members should have the following characteristics:

Figure 1: Characteristics of an RRT

 **Mobility:** RRT members are deployable assets capable of mobilizing to the site of a public health emergency.

 **Timeliness:** RRT members can respond in a timely manner appropriate for the specific public health emergency.<sup>1</sup>

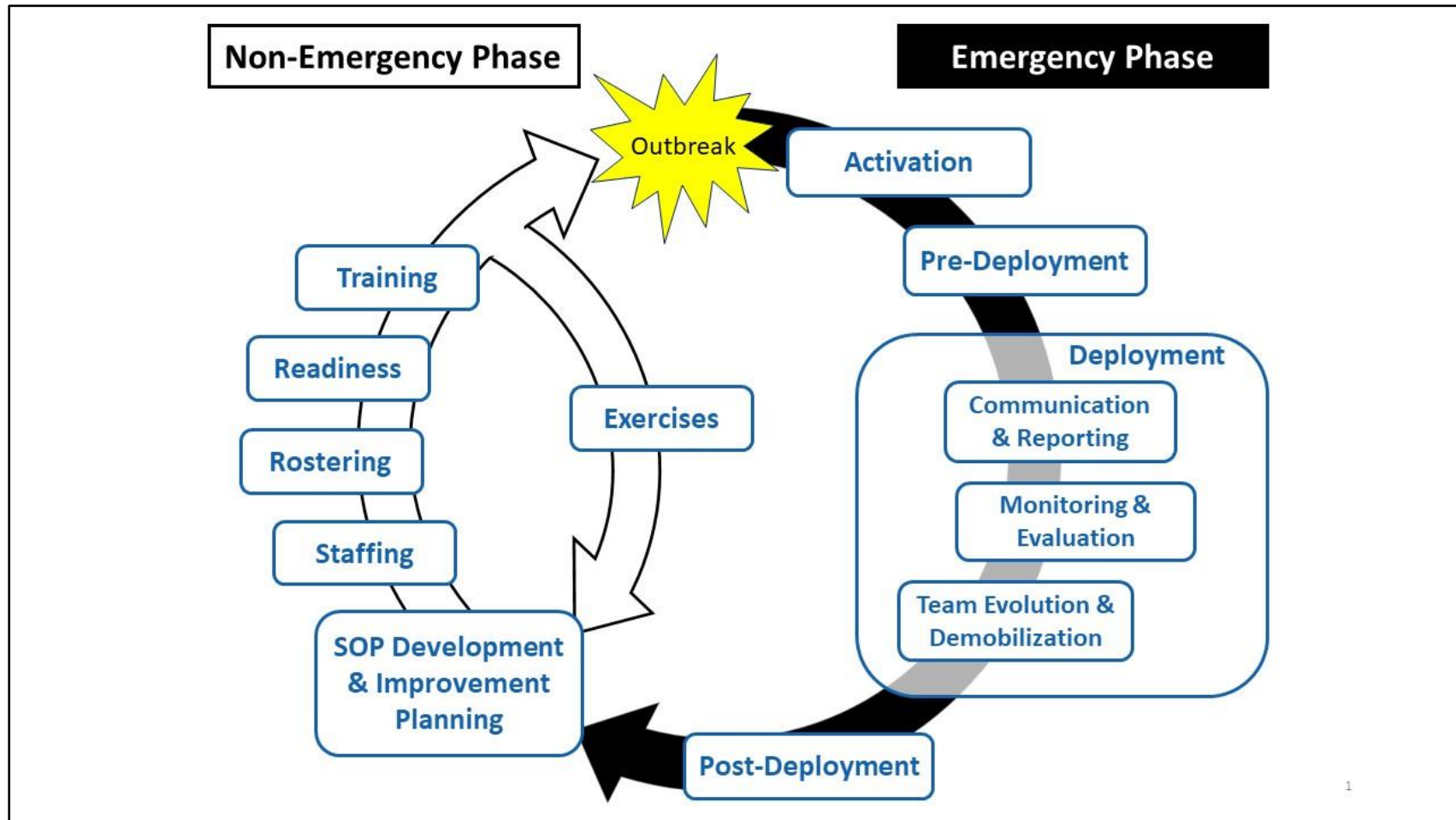
 **Expertise:** RRTs have subject matter expertise and a diversity of skills needed to address common public health emergencies in their country.

 **Coordinated:** As one component of a larger emergency response strategy, RRT activities align with the overall emergency response priorities and are coordinated with relevant stakeholders.

*1: This relies on the ability to [quickly identify appropriate responders](#) (i.e., [roster functionality](#)), [responder readiness](#) (i.e., responders have completed training and administrative processes necessary for deployment), and [pre-deployment processes](#) (e.g., logistical processes to equip and deploy responders)*

RRT operations can be organized into two phases: the non-emergency phase and the emergency phase (Figure 2). The cyclic nature of these processes highlights the continuous support required for an RRT to be functional even in non-emergency contexts. In general, standard operating procedure (SOP) development for both phases, staffing, rostering, readiness, training, and exercising of the RRT occurs in the non-emergency phase; whereas, RRT activation, pre-deployment, deployment and post-deployment processes occur during the emergency phase. In an active emergency, processes in these two phases may intersect, especially in countries that do not have a functional RRT prior to emergency onset.

Figure 2: RRT emergency and non-emergency phase operations



## 2 RRT ESTABLISHMENT

RRTs should be incorporated as a component of a larger emergency response strategy. Critical elements of this to ensure there is a framework for RRT implementation and support can include: 1) an emergency coordination unit i.e., a public health emergency management program using an Incident Management System (IMS) or country-equivalent system, and 2) elements of a functioning public health system (e.g., surveillance system, laboratory network, etc.). The core capacities of the public health emergency response strategy are beyond the scope of this guidance document and have been detailed elsewhere (1,7-13). [Appendix 2. Rapid Response Capacity Checklist](#) outlines suggested emergency response capacity elements based on the Joint External Evaluation benchmarks (7,8). In cases where these fundamental processes are still developing, RRT establishment can progress successfully as long as these gaps are identified and considered in the RRT SOP.

### Key Topics for Discussion

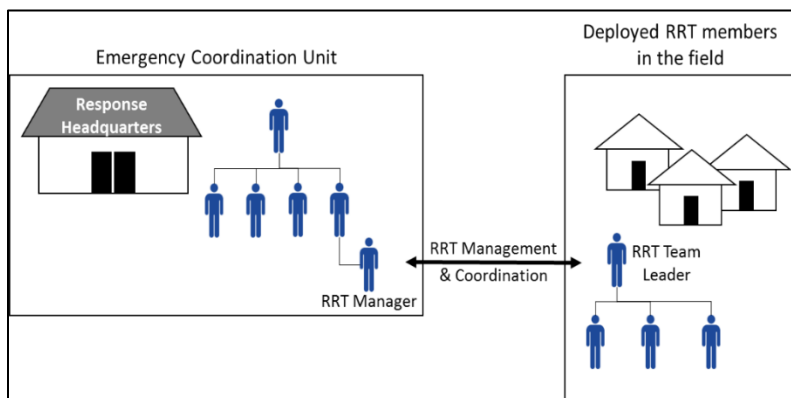
- Are RRTs included in the emergency response plan?
  - If yes, how does the plan support RRT non-emergency and emergency phase processes (Figure 2)?
  - If no, can RRTs be incorporated? Or can an RRT-specific plan be added as an annex to the emergency response plan?

### 2.1 MANAGEMENT PERSONNEL

A person or group of individuals dedicated to RRT management and coordination is recommended to ensure an RRT is effectively established and sustained during a non-emergency period to be functional and ready during an emergency response. The number of staff required to management and maintain a ready-to-deploy RRT depends on the size of the RRT (i.e., number of RRT members), whether an on-call system is utilized and needs to be maintained, and the pre-existing support of the emergency coordination unit in the country.

RRT management should be included into the larger emergency response strategy and ideally sit within the emergency coordination unit (i.e., a public health emergency management program using an IMS or country-equivalent system). When there is no active emergency response, during the non-emergency phase, RRT management may be responsible for planning, staffing, rostering, training, and exercise development to prepare the RRT members to be efficient and effective in an outbreak response.

*Figure 3: RRT Management is situated within the Emergency Coordination Unit. It is responsible for managing the deployed RRT members and coordinating their activities with the larger emergency response*



During an emergency response, if not already, RRT management would ideally be situated within the country's emergency coordination unit. If an IMS is employed in the country, RRTs are often housed in the operations section following chain of command through that section, but this can vary depending on the size of the outbreak and the existing response structure (11).

RRT management's primary objective during a response is to provide operational support to the RRT members so that they can focus on applying their technical expertise in the field (Figure 3). During a response, RRT management alone or with input from key decision makers, may be responsible for:

- Identifying and selecting RRT members for deployment
- Providing and/or procuring support for the RRT, including logistics support, technical guidance and expertise, equipment and human resources
- Ensuring execution of established pre-deployment, deployment and post-deployment RRT processes
- Facilitating communication between the RRT and the emergency coordination unit, and
- Monitoring RRT response activities ensuring a coordinated approach and alignment with response priorities

To maximize the effectiveness of the RRT management individual or team, the following RRT management personnel profile is recommended:

- Familiarity with the emergency response coordination system (e.g. IMS or country equivalent)
- Authority to make key decisions on RRT priorities and activities
- Authority to approve funds and procure supplies and equipment for RRT members, and
- Authority to make personnel decisions including disciplinary action when needed

---

#### Key Topics for Discussion

- Who should be an RRT manager?
  - Are they familiar with the emergency response infrastructure and the personnel with whom they will need to interact?
  - Do they have authority to make key decisions about RRT response activities?
  - Can they authorize funds and/or procure supplies and equipment for the RRT?
- Who is responsible for hiring the RRT manager?
- Where will the RRT manager sit in the overall response structure?
  - Is the RRT manager a full-time job or incorporated in a pre-existing staff's responsibilities?
  - Where does the RRT manager sit during an outbreak response (i.e., what section of the country's emergency response structure)?

## 2.2 FINANCIAL AND ADMINISTRATIVE CONSIDERATIONS

Many financial and administrative decisions concerning personnel-related processes are necessary for RRT establishment, maintenance, and response activation. These decisions are particularly important when RRT members are not full-time responders and are employed in non-emergency positions and/or come from organizations not usually involved in emergency response activities. To address administrative obstacles to rapid mobilization as well as protect, support, and fairly compensate RRT members, based on country-context these administrative considerations can include:

- Budget ([Appendix 3. Budgetary Considerations](#))
- Compensation: Wages and other funds



- Employment-related issues
- Healthcare and insurance coverage
- Code of conduct: ethical, moral, and lawful expectations



The maintenance of RRT capacity requires sustained funding and human resources over time

---

## Key Topics for Discussion

### Budget

- What factors should be considered when drafting a budget ([Appendix 3. Budgetary Considerations](#))?

### Employment-Related Issues

- Will the RRT include full-time dedicated responders?
- Will the RRT members be from other employment positions (most common approach)?
  - How will RRT members' absence during mobilization affect regular operations? How will normal work activities be covered?
  - Are any legal contracts or agreements needed to mobilize responders?
    - Is there a clause in employment contracts (if used) that states mobilization for emergencies is part of employment duties? If not, is one needed?
    - What needs to be established to mobilize RRT members from other Ministries or external organizations? Interagency agreements, memorandums of understanding, etc.
- How will RRT members' absence during mobilization affect regular operations? How will normal work activities be covered?
  - Will RRT members be prevented from mobilizing due to normal workload? Is the normal work more important than the emergency response?
  - Will supervisors be reluctant or actively prevent RRT members mobilization?
  - Is there a plan in place to handoff daily work to a colleague while mobilized?

### Compensation

- Who is responsible for paying the salary of the RRT member when they are deployed?
- How are per diems financed and provided?
  - Are there mechanisms to provide per diem to RRT members prior to mobilization, i.e. an advance?
  - If mechanisms exist, what is the process for doing this and how can that be shared with responders so they can use it?
  - If no mechanisms exist, can a mechanism be set up? Who has the authority to make this decision?
- Will RRT members be given special compensation (financial or other) for overtime, weekend, and/or holiday pay while mobilized for a response?
- Will additional incentives (financial or other) or hardship pay be given?
  - If incentives are offered to deploying RRT members, what will happen with the RRT members (or other staff) who are not deploying or receiving the incentive? Will this cause issues? How will it be handled?

### Healthcare and Insurance Coverage

- What access to healthcare will RRT members have if they are injured or become ill while on deployment?
  - If there is a vaccine-preventable disease outbreak (e.g. yellow fever), how will RRT members protect themselves from infection? Will they be vaccinated/have access to vaccination?
  - What if responders refuse to be mobilized because of the risks?
- Who will pay the healthcare expenses?

- Will medical, disability, and life insurance will be provided to RRT members?
- Will RRT members and/or their family be compensated in the case of illness, injury, or death?
- What is the provision of psychosocial support during and post deployment?
  - Consider what crisis support will be needed during large events?
- How will security for the RRT be provided, tracked, and ensured while deployed?
- What is the process for an emergency evacuation due to medical or safety concerns?
  - Who would need to be involved in developing the process? E.g. law enforcement/security personnel, ambulance services
  - Who has the authority to approve the process?

#### **Code of Conduct**

- Is there a code of conduct (guidance or policy document on appropriate professional conduct including ethics) for RRT members? If not, how should this be developed and what should it include?
  - Does it cover off-hours while mobilized?
  - Are there different expectations for Team Leaders vs. RRT members? Ministry staff vs. RRT members from other organizations?
- What are the consequences for inappropriate behavior during a mobilization?
  - How are the consequences determined for various levels of offense?
  - When is it appropriate to send an RRT member home (if ever)?

#### **RRT Members from External Organizations**

- Which organization will pay wages and salaries while the RRT member is mobilized?
  - Will home organizations be willing to pay salary when the RRT member is mobilized and not covering their normal duties?
  - Can the mobilizing organization pay the host organization to cover salaries during mobilization?
- What legal contracts or agreements with individual RRT members and/or their organizations are needed?

## **2.3 STANDARD OPERATING PROCEDURE DEVELOPMENT**

Standard operating procedures (SOPs) are written documents that delineate steps for carrying out regularly recurring operations so that they are conducted in a consistent manner (14). Use of SOPs can improve the efficiency and effectiveness of response mechanisms. In addition, they preserve the institutional knowledge beyond the individuals who regularly follow the SOPs. Ideally, SOPs are revised regularly to incorporate lessons learned from previous emergency responses.

In coordination with planning, RRT SOP(s) development covering the non-emergency and emergency phases would ideally occur prior to an outbreak occurring. The RRT SOP(s) may include strategic components, such as establishing authorities and long-term objectives of the RRT, and operational components outlining processes and details around RRT functioning. Key stakeholders responsible for a country's public health emergency response operations should participate in the drafting of RRT SOP content, including national and sub-national staff.

Below is suggested RRT content for the emergency phase SOP(s) (Table 1). RRT SOPs should be written in consideration of the existing emergency response infrastructure and should not be created independently.

Table 1: Suggested RRT SOP content

Non-Emergency	Pre-Deployment	Deployment	Post-Deployment
<ul style="list-style-type: none"> <li>• RRT management</li> <li>• RRT Finance and Administration</li> <li>• RRT staffing and rostering</li> <li>• RRT training</li> </ul>	<ul style="list-style-type: none"> <li>• RRT activation criteria</li> <li>• RRT composition and structure</li> <li>• RRT pre-deployment processes</li> </ul>	<ul style="list-style-type: none"> <li>• RRT coordination</li> <li>• RRT reporting</li> <li>• RRT Security/Safety (including evacuation)</li> <li>• Team evolution</li> <li>• Demobilization processes</li> </ul>	<ul style="list-style-type: none"> <li>• Post-deployment resources</li> <li>• RRT debrief process</li> <li>• RRT After Action Review</li> <li>• Improvement planning</li> <li>• Response monitoring and evaluation process</li> </ul>

### Key Topics for Discussion

- What SOP(s) exist for RRTs? Consider general emergency response SOPs, even if not specifically for RRTs.
- What SOP(s) need to be developed?
- Who is responsible for RRT SOP content development?
  - What key decision makers should participate in the development?
- Where will the RRT SOP(s) be kept and maintained for rapid access?
- Who will be responsible for reviewing and approving the proposed RRT SOPs?

## 2.4 RRT STAFFING

The ability to deploy rapidly is dependent on having trained and ready to deploy staff capable of filling critically needed roles for an outbreak response. Emergencies can stress human resources; this can affect all aspects of the public health response structure, from national staff to sub-national staff to front-line healthcare providers. Selecting potential RRT staff *before* an outbreak is critical to timely deployment and response (6).

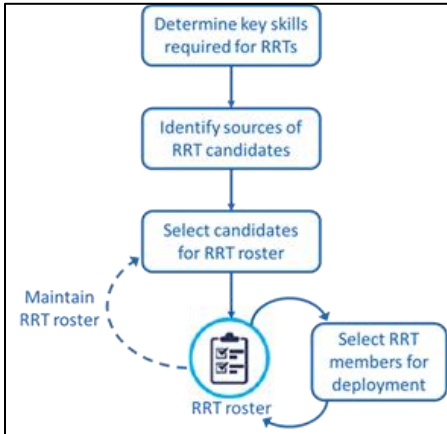
The staffing size of the RRT roster (i.e., how many RRT members) will depend on the financial and staffing resources available to support and manage an RRT. In addition to these factors, other considerations may include:

- Available pool of responders needed in past responses considering:
  - Common outbreaks in the country
  - Need for surge staff during seasonal outbreaks
- Number of requests received for RRT support (e.g., the national RRT may not be requested as much as the subnational RRTs)
- Percentage of RRT members that may be unavailable when you request them to deploy
- Attrition/staff turnover

Once the RRT is established, monitoring how often the RRT is being requested and the number of members deployed, can be used to modify the size of the RRT. For those countries who want to employ RRT on-call months,

months that RRT members are scheduled to deploy for an emergency, will need to consider a large RRT size to ensure there is an adequate number of skills and roles represented month to month.

Figure 4: Steps for staffing and rostering RRT members



**2.4.1 Identify Skills and Roles**

The first step in staffing an RRT is identifying the skills and corresponding roles needed for a roster (or list) of RRT members. RRT management can identify desirable skills and roles by considering common outbreaks in the country and associated activities conducted during an outbreak response.

A comprehensive list of skills and roles in common outbreaks are beyond the scope of this guidance document and have been detailed elsewhere (15-17). Specific activities may vary by disease and response. Example outbreak activities are illustrated below to highlight the diversity of skills and roles often needed (Table 2):

Table 2: Example of some roles and skills needed to complete outbreak activities

Activity	Examples of Relevant Skills	Potential Roles
<b>Maintaining situational awareness of the outbreak through surveillance</b>	Case investigation, line list review, laboratory testing, data cleaning and analysis, report writing, data visualization	Epidemiologists, Laboratory Specialist, Data Managers, Statisticians
<b>Supporting the appropriate treatment and management of patients with disease</b>	Examples of relevant skills: clinical skills, specimen collection, infection prevention and control (IPC)	Case Management Specialist, IPC Specialist, Laboratory Specialist
<b>Communicating with the public and others</b>	Developing health education messages for lay audiences, working with media, conducting focus groups to identify knowledge, attitudes, and practices of communities, develop	Social Mobilization Specialists, Health Communication Specialists, Behavioral Scientists, Anthropologists, Psychologists, Social Workers

	messages to counter stigma and rumors	
<b>Coordinating field response activities within the RRT and with other response organizations</b>	Delegating tasks to RRT members, decision-making for RRT response activities, emergency management, leadership	Team Leaders (often with training and experience to fill other roles)

It is important to acknowledge the distinction between skills and roles. An epidemiologist, for example, may be requested to do a variety of activities such as conduct case investigations, set up emergency surveillance, support data management, design a study, or run statistical analyses. Not all epidemiologists will have the skills to conduct all these activities. Therefore, it is important to identify the skills needed in a response so that when an emergency occurs, the RRT members can be selected by matching the response needs with the RRT members' skillset.

Note: There may be skills that only a few people have, such as specific laboratory testing methods, vector-borne specialists, etc. that may be relevant for the country context that should be considered when staffing an RRT.

### Key Topics for Discussion

- What are the common disease outbreaks in the country?
- Are there other diseases or emergencies for which the country must be prepared to respond, even if they are not common?
- What roles or positions are needed to respond to these emergencies?
- What skills are needed for these roles?

#### 2.4.2 Identify Sources of RRT Candidates

Once the desired skills and roles are identified, potential candidates for the RRT can be identified. Internal governmental sources of candidates may include:

- National disaster management authority
- Outbreak response sections within the Ministry of Health
- Other Ministries (e.g. animal health, border protection, engineering, vector control, etc.)
- Trainees (e.g. field epidemiology training programs)

Large emergencies can quickly overwhelm government emergency response capacity; therefore, other in-country public health organizations and international partners with expertise and/or engagement in response-related activities may be able to provide additional surge capacity. Examples of potential sources of qualified candidates may include:

- Public health organizations
- Private institutions
- Universities and training programs
- Professional associations
- National and international non-governmental organizations (NGOs)
- United Nations agencies
- Emergency response professionals from neighboring countries

Memorandums of understanding established prior to an emergency with external partners can facilitate rapid engagement during an emergency. At the community level, volunteers can be considered for participation in

certain response activities. With proper training and experience, volunteers can fill several roles such as community advocates and risk communication focal points.

---

### Key Topics for Discussion

- Who currently responds to outbreaks? Is there a specific team or group within your government or outside the government?
- Which other areas within the government have staff with the desired skills (or staff capable of developing the skills through training and experience)?
- Which external organizations may have staff with the desired skills? What agreements (e.g. contracts, memorandums of understanding) will be needed before staff could be mobilized, if any?
- What agreements (e.g. contracts or MOUs) will be needed to have their staff be part of the RRT?

### 2.4.3 Candidate Selection for RRT Roster

Identifying selection criteria prior to candidate recruitment can facilitate the selection process. Selection criteria may include educational background, and public health or emergency response training, response experience, language skills, etc. ([see 2.6 Roster Management Section](#)). Consideration of the qualifications and responsibilities of RRT roles may help identify selection criteria (see examples in [Appendix 4. Rapid Response Team Member Profiles](#)). The selection criteria can guide the development of an application form to give to interested candidates during recruitment. RRT management can then use the application form to identify the most qualified candidates given the selection criteria.

During the staff selection process, RRT management may want to consider classifying candidates as potential team leaders based on their leadership skills and qualifications. Team leaders can also operate as RRT members but would typically have experience in emergencies and receive additional training on leadership and management ([see 3.1.4 Team Leadership Training](#)).

Although less often employed, if funding and resources are available, a tiered RRT structure can be considered—composed of a core set of dedicated responders on the RRT, who regularly respond to outbreaks as part of their normal duties and a surge tier of RRT members who are regularly employed in other positions and only activated for larger responses or when specific skills are needed. If this is utilized, selection criteria for the core members and the surge members can be different to reflect these different responsibilities.

Of note, not all candidates with key skills are appropriate for enrollment on an RRT and certain exclusion criteria may need to be considered. For example, persons with essential roles in emergency response and coordination may not be appropriate for the RRT roster; their absence while deployed to the field may negatively impact the overall emergency response operations. Additionally, the organization may have relevant medical, mental, and physical benchmarks that are required to ensure an RRT member can operate in austere and stressful settings.

### Maintenance Alert:

Staff turnover is inevitable; consider yearly recruitment to ensure an even distribution of skills and roles

---

### Key Topics for Discussion

- How many people should be selected for the RRT roster?
  - How many people are usually mobilized for a response?
  - How many additional people should be selected? Consider not all staff will be available when needed for an emergency.

- What inclusion criteria will be used to select candidates?
- What exclusion criteria will be used?
- Will candidates need to fill out an application? If yes, what questions can address the inclusion and exclusion criteria?
- What criteria can distinguish potential Team Leaders from the RRT candidate pool?
- Who has the authority to select the candidates?
- Do candidates’ supervisors or organizations need to approve their selection? If yes, how will their approval be obtained?

## 2.5 ROSTER MANAGEMENT

Once RRT members are selected, they will need to be added to the roster, defined in this guidance document as a searchable list of RRT members. A roster maintains current, up-to-date data on each staff member and may include:

- Contact information
- Regular employment organization
- Designated role(s)
- Relevant skills for their designated role(s)
- Team leader qualification
- Training tracking
- Response experience
- Language skills
- On-call months (if applicable)
- Any factors that may influence their ability to respond effectively and safely, “readiness”, such as medical clearances and vaccination status if applicable ([see section 2.6 Responder Readiness](#))

It is important that the roster is easily searchable and capable of producing lists of RRT members with specific skills or other characteristics. When an outbreak occurs, a well-developed roster will facilitate quick identification of appropriate RRT members for mobilization. A roster can be used in multiple ways in both the non-emergency and emergency phases (Table 3).

*Table 3: Suggested roster usage by response phase*

<b>During the non-emergency phase, the roster can be used to track:</b>	<b>During the emergency phase, the roster can be used:</b>
<ul style="list-style-type: none"> <li>• Skills and experience of RRT members</li> <li>• Potential roles the candidate could fill during a response</li> <li>• Trainings completed and needed</li> <li>• Participation in past responses</li> <li>• Surge capacity readiness</li> </ul>	<ul style="list-style-type: none"> <li>• To select responders for deployment</li> <li>• As part of an on-call system</li> <li>• To monitor surge capacity availability</li> </ul>

An on-call system allows for a more organized approach when activating responders but is more administratively intensive; it requires RRT members to identify time periods during which they are available to deploy and then remain available during those designated periods. Additionally, it requires that each time period is balanced in its representation of different expertise and skills so that responders with these skills are available to mobilize throughout the year.

Roster design and the software platform used for data management and analysis are important considerations. Roster variables reflect deployer skillsets and readiness status and are key components of the deployer selection criteria. Many software platforms can be used to house the roster and the choice should be made based on the ease of data entry, deployer selection, data validation, data shareability, and analyses to track progress and/or show impact of the RRT program ([see section 5 RRT Monitoring and Evaluation](#)).

Rostering is a continuous process. As people change or leave their job assignments, they may no longer be available or eligible for the roster; therefore, new candidates will need to be identified and selected on a regular basis. Additionally, changes in RRT members' contact information, training, and skills must be updated regularly in the roster to ensure its relevancy during an emergency.

#### Maintenance Alert:

Roster management can be resource and time intensive, especially if an on-call system is utilized. Consider staffing a roster manager who will be responsible for keeping the roster updated

---

#### Key Topics for Discussion

- What software platform will you use for a database or spreadsheet to collect the RRT's information?
- What information do you have or want in the RRT roster? I.e. what variables are needed in the spreadsheet?
- How will the RRT roster data be collected?
- How will the roster data be kept up to date? Who is responsible? How often will it be updated?
- How will the roster be replenished to account for RRT member attrition?

## 2.6 RESPONDER READINESS

Another key consideration in RRT establishment is the development of readiness requirements—what factors does a responder need to meet to be able to deploy (e.g. medical clearances, psychological screening, physical benchmarks, vaccinations, travel documents, required security/safety trainings, etc.). Readiness reflects the requirements needed for a responder to deploy and should be determined by the emergency coordination unit in conjunction with RRT management. The requirements can be tracked in the RRT roster and, if any of the requirements are not fulfilled, a member can be deemed ineligible for deployment. An SOP delineating the necessary requirements for deployment and the process for meeting them can help RRT members achieve and maintain their readiness.

## 3 RRT TRAINING

---

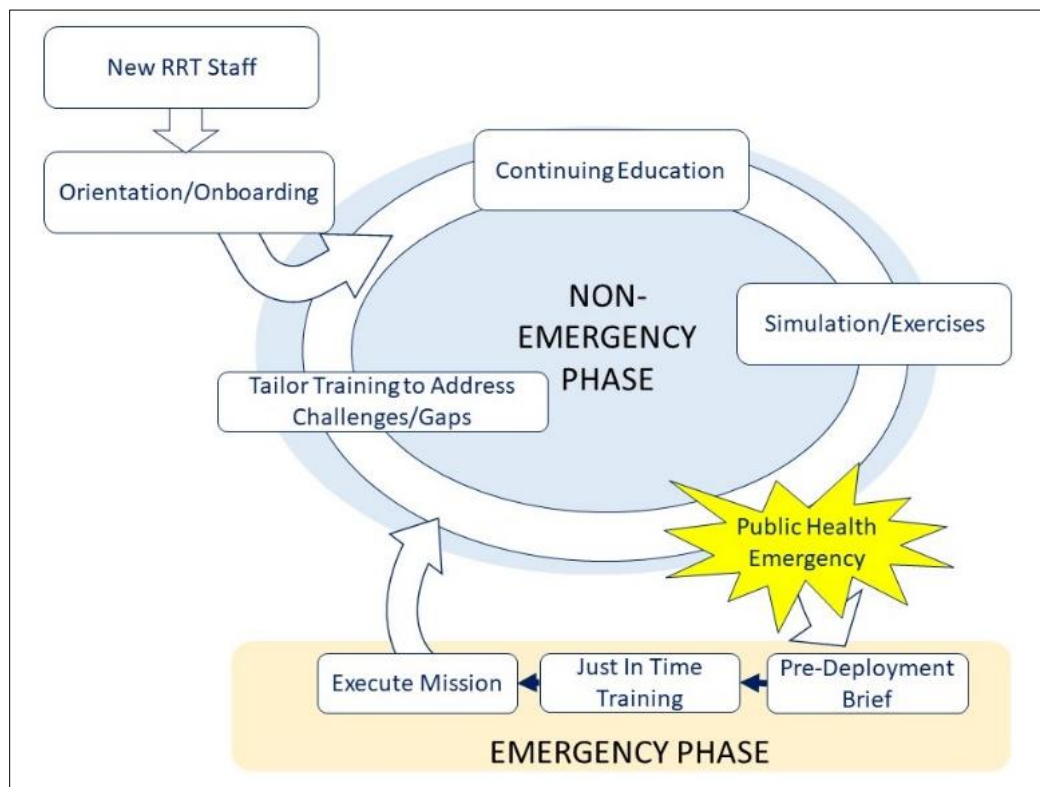
Ideally, all RRT members will undergo regular, continual training throughout their membership on the RRT and prior to deploying for an outbreak response (Figure 5). The goal of an RRT training program is to have the RRT members trained and ready to deploy prior to a public health emergency. Additionally, the training program:

- Ensures RRT members have the same level of basic knowledge and skills
- Provides RRT members opportunities to learn new skills and practice existing skills
- Keeps RRT members' skills current with changing methods and science
- Allows RRT members to engage with their teammates
- Translates RRT members' subject matter expertise into a field, response setting



An RRT training program should be designed according to the country's response context and incorporates existing resources to ensure that the most appropriate personnel are trained on the most up-to-date and relevant material.

Figure 5: Proposed RRT training cycle



### 3.1.1 Orientation/Onboarding Training

An initial orientation or onboarding training can be provided to introduce [operational concepts](#) to ensure RRT members can rapidly and safely deploy as well as [basic technical](#) content on how to apply their subject matter expertise into a field/emergency setting. Ideally, this training would occur soon after the RRT member is selected for the RRT and prior to an emergency. The training topics in [Appendix 5. Rapid Response Team Training Topics](#) can be considered for this training but should be adapted to the country context and disease specific processes.

#### 3.1.1.1 Technical training

Technical training, in this document, refers to information and skills RRT members need to be effective public health responders. It is often scientific, public health content and can be role specific. Technical training should focus on common response methods and diseases outbreaks experienced by the country. Initial technical training should be provided soon after rostering so that all RRT members have a similar background and understanding of outbreak response and their anticipated role.

Technical training can include cross-training RRT members meaning that, in addition to knowing their primary duties, team members are trained on the basic duties of other response roles. Since deploying representatives from every sector on an RRT is often unnecessary and costly, cross-training RRT members in multiple roles can reduce the resource burden and improve RRT efficiency. Additionally, it increases awareness of the other roles on the team, improving inter-team communication and collaboration.

### **3.1.1.2 Operational Training**

Operational training covers topics needed for successful mobilization. This is what members should know regarding deployment processes as well as what is needed for a safe, secure and efficient deployment. The following topics can be considered, but should be modified for the country context:

- Administrative requirements for deployment
- Pre-deployment processes and protocols
- Deployment processes and protocols
- Post-deployment processes and protocols
- Safety and security in the field
- Field first aid for injuries
- Psychological first aid and resilience
- Deployment readiness requirements ([see 2.6 Responder Readiness](#))

### **3.1.2 Continuing Education**

Continuing education courses can be opportunities to introduce new content not covered during the onboarding training. It may also include revisiting material presented in prior trainings annually, as a “refresher training”. The training can be general emergency response courses or more in-depth courses on specific technical processes, activities, challenges, etc. Additionally, these continuing education courses can provide updates to response staff regarding changes in the national guidelines/standards or in the protocols, when they occur.

### **3.1.3 Exercises**

Once team members have been rostered, trained, and meet readiness requirements, exercises can be used as an opportunity for RRT members to apply and practice their skills and to test RRT SOP(s) content. Exercises can be delivered in multiple formats and modalities, from tabletop exercises to more resource-intensive simulation exercises. The exercises can test the RRT alone or be expanded to test the overall emergency response system involved in RRT deployment. Simulation and exercise development are outside the scope of this document but are described elsewhere (18-20).

### **3.1.4 Team Leadership Training**

Effective leadership of a team of responders often requires skills beyond technical expertise and training. Field team leaders must understand their responsibility to the team, the mission, and RRT coordination and integration with the emergency coordination unit. Therefore, team leaders will likely benefit from additional training beyond what the other RRT members receive. Team leader training may include:

- Coordinating team members and resources
- Delegating tasks matched to skillsets
- Conducting daily briefings
- Troubleshooting common issues that arise in the field, including technical and personnel challenges
- Interacting with humanitarian actors, external partners, and diplomatic approaches
- Reporting mechanisms to the emergency coordination unit (e.g. Emergency Operations Center or country-equivalent (13))
- Estimating team needs (staffing, subject matter expertise, resources/supplies, etc.)
- Recognizing responder burnout and ensuring responder mental health wellbeing

---

#### **Key Topics for Discussion**

- What content should be included in the RRT training curriculum ([Appendix 5. Rapid Response Team Training Topics](#))?

- Will the content be different based on the RRT member's role?
- What additional training content should RRT team leads have?
- What aspects of the training curriculum should be mandatory?
- How will the training be financed considering RRT member salary coverage, facilitator salaries, venue cost, etc.?
- Where will you get the content for the training? Are there pre-existing local/internal trainings you can use? Are there external trainings that you could use?
- When should RRT members be trained considering the non-emergency and emergency phases? How often should they be trained?
- Who will organize and facilitate the training?

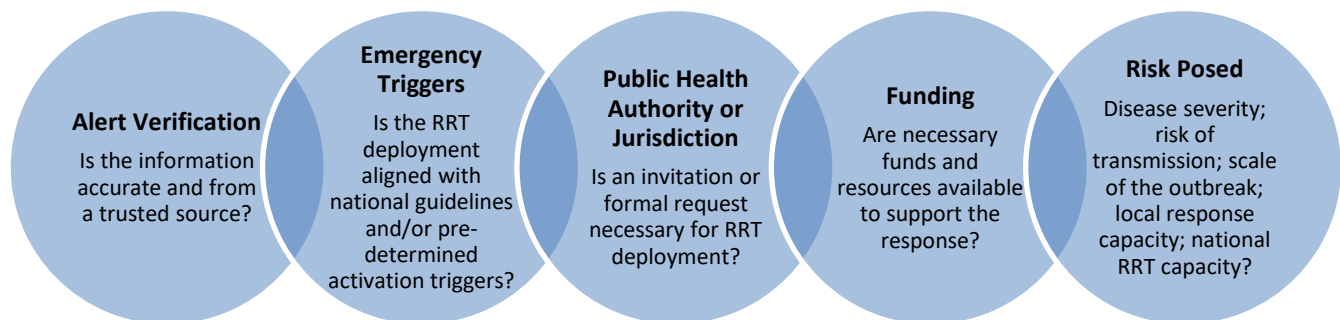
## 4 RRT RESPONSE

The emergency phase of RRT operations begins with an alert of a potential outbreak and includes processes before, during, and after the outbreak response. Pre-deployment processes refer to preparatory activities for deployment that typically occur at the emergency response headquarters (e.g. the EOC or country equivalent). Deployment processes begin when the RRT member(s) leave for the field and end when the RRT demobilizes and returns. Post-deployment processes occur at the emergency response headquarters after the RRT member(s) return.

### 4.1 RRT ACTIVATION

The shift from the non-emergency phase to emergency phase of RRT operations often begins with an alert of a potential public health threat and the decision to activate the RRT. RRT activation may require significant resources, so the decision-making criteria for RRT activation would ideally be delineated in the RRT activation SOP *prior* to an outbreak. Considerations include:

Figure 6: Decision making criteria for RRT activation



#### Key Topics for Discussion

- What decision-making criteria (factors or data) should be considered in the decision to activate the RRT?
- Who is responsible and has the authority to activate the RRT?
  - What procedures can be put in place to expedite the decision?

### 4.2 RRT COMPOSITION FOR DEPLOYMENT

Once the decision has been made to activate the RRT, an individual RRT member or multiple RRT members will need to be selected to deploy to the field. If the response needs are specific and clearly delineated, the roster can be used to identify the appropriate RRT members to fill the need. If the response needs are not clear and there was no request for specific technical expertise, then roster selection can focus on filling gaps between the response needs and the local response capacity to maximize efficiency and save resources. Considerations in this decision may include:

- *Standard outbreak response activities for the disease:* What technical roles and skills are needed to conduct the activities?
- *Outbreak characteristics such as the scale of the outbreak and geographic distribution of cases:* Will multiple teams need to be deployed to different locations?

- *Population characteristics and factors that may impact the vulnerability of certain populations:* Do some RRT members need certain skills, such as speaking a local language, for optimal effectiveness?
- *Occupational risk assessment:* Is the disease process targeting certain age groups and/or medical conditions that would restrict the deployment of certain RRT members?

An alternative approach is to pre-select a multidisciplinary team to deploy to emergencies regardless of the disease or response context, sometimes referred to as “Go Teams”. Once in the field, the pre-determined RRT members can assess the response needs and RRT members who are not needed can be rapidly demobilized.

Additional considerations for RRT composition include the safety and security context; if safety and/or security are an issue, consider the inclusion of a safety/security officer on the RRT. Additionally, for large-sized RRTs or RRTs covering a large geographic spread, a logistics expert can be considered to deploy as part of the RRT.

---

### Key Topics for Discussion

- How will the RRT composition (what roles) and structure be decided?
- Who will decide the RRT deployment selection?
- What factors will be considered in RRT deployment selection?
- What criteria will be used in deciding to deploy support staff with the RRT (i.e. safety/security officers, logisticians, etc.)?

## 4.3 PRE-DEPLOYMENT PROCESSES

Delays in response efforts for some diseases can result in large population exposure or transmission and quickly overwhelm local response capacities. Therefore, the primary goal of the pre-deployment processes is to rapidly prepare and equip RRT members for a safe and effective field response. The following sections describe recommended technical and operational activities before deployment.

### 4.3.1 Pre-Deployment Briefing

The purpose of the pre-deployment briefing is to provide situational awareness to the deploying RRT members including the latest information on the current outbreak. Some information may not be available, particularly in the early stages of the outbreak but recommended topics and materials to cover include:

- Latest surveillance data and/or situation reports, highlighting data on at-risk groups, hotspots or heavily affected areas if available
  - Identify gaps and data quality issues for RRT members to resolve in the field
- Previous response efforts prior to the RRT deployment including any RRT debriefings from previous teams returning from the field
- Objectives that are clear and well-defined and lead to concrete activities in the field (21)
- Standardized tools to use in the field, including case investigation forms, analytic software (e.g., Epi Info), evaluation checklists, environmental testing kits, national guidelines, etc.
- Reporting mechanisms identifying the leadership structure and communication responsibilities at all levels. For example, daily RRT reporting by the RRT team lead to the emergency coordination unit
- Indicators or metrics for measuring response effectiveness
- Current security situation, RRT security resources (if any), and emergency evacuation plans
- RRT safety considerations for the specific emergency such as: personal protective equipment use, medical checks, disease-specific vaccination, psychosocial measures/resources, etc.

Note: If there is not time for an in-person briefing, the same information can be provided in hard or soft copy to the RRT members to review while en route to the field.

RRT team leads have additional responsibilities, such as coordinating with key stakeholders in the field and planning the best course of action given their RRT members' skillsets and response activities. A separate RRT team lead briefing can be used to clarify expectations for their role, alert to potential challenges of the current situation, and prepare them for effective leadership and management of the RRT in the field.

 Maintenance Alert:

Consider creating a standard template that can be adapted to different contexts.

### 4.3.2 Just-in-time Training

Just-in-time training provides technical information and content, such as biological and epidemiologic characteristics of the disease of concern as well as role-specific pertinent information for the particular disease. Like the pre-deployment briefing, just-in-time training can be provided as reference materials to be reviewed while en route to the field.

 Maintenance Alert:

Consider compiling and creating just-in-time training content of your country's most common outbreaks during the non-emergency phase.

### 4.3.3 Equipping the Team

RRT members may need certain supplies and equipment to safely meet their objectives while in the field; appropriate supplies, specific to the disease outbreak, should be identified and provided before deployment. In general equipment should cover communication, safety (e.g., personal protective equipment) and technical/scientific supplies. A logistician can delineate where and how the resources will be available to the team (procured upon arrival to the field versus carried to the field), along with a supply distribution plan. Checklists are useful tools to track supplies and equipment for both logisticians and deploying RRT members.

Supply needs may arise during deployment; therefore, a funding mechanism to cover field costs, such as cash advances to team members and/or credit accounts with local vendors in the field, can be considered when possible..

---

#### Key Topics for Discussion

- What pre-deployment processes are needed to mobilize RRT members?
- What information should be provided to RRT members before they are mobilized?
- What disease-specific training is needed for the top priority diseases?
  - What existing materials can be used to develop the training?

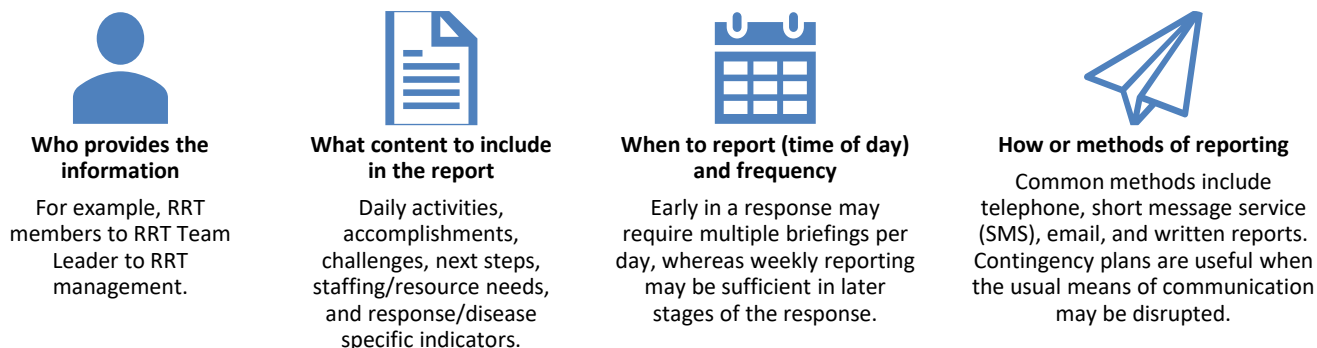
## 4.4 RRT DEPLOYMENT PROCESSES

### 4.4.1 RRT Coordination & Reporting

Regular, effective communication is critical for response coordination. Direct communication between team members can facilitate coordinated teamwork in the field and communication with the emergency coordination unit can facilitate better overall response coordination. Coordinating RRT response efforts includes identifying what information is cleared to share with others in the field, attending field coordination meetings, and collaborating with other response partners, among others.

Contributing to coordination, clear reporting mechanisms and expectations can facilitate effective communication within the team as well as with RRT management and the emergency coordination unit. RRT reporting protocols should outline who on the RRT will provide the information, what critical information elements are included in the report, when to report, and how to report (Figure 7).

Figure 7: Key components of RRT reporting protocol



## Key Topics for Discussion

### Coordination

- When RRT members arrive, who leads response activities in the field i.e. who has jurisdiction?
- What coordination activities should happen if the emergency crosses or is near the national border?
- What information should/can be shared outside the RRT and emergency coordination unit?
  - Who has the authority to make decisions on information sharing?
  - Are there ethical considerations regarding international data sharing?
- What field coordination meetings should the RRT members attend?
- Who are the key partners and stakeholders?

### Reporting

- How often and in what format should the RRT members report to RRT team lead? From the RRT team lead to the RRT Manager (or equivalent at headquarters)?
  - How can the reporting format address the balance between time spent developing reports and time spent doing other response activities?
- What critical information would you request of RRTs regardless of the disease process?
- Who is responsible for compiling the data and writing the report?
- How will safety and security for the RRT be provided, tracked, and ensured while deployed?
- How will urgent requests for data be handled?
  - How will the responsibilities be distributed among RRT members and staff in the emergency coordination unit?

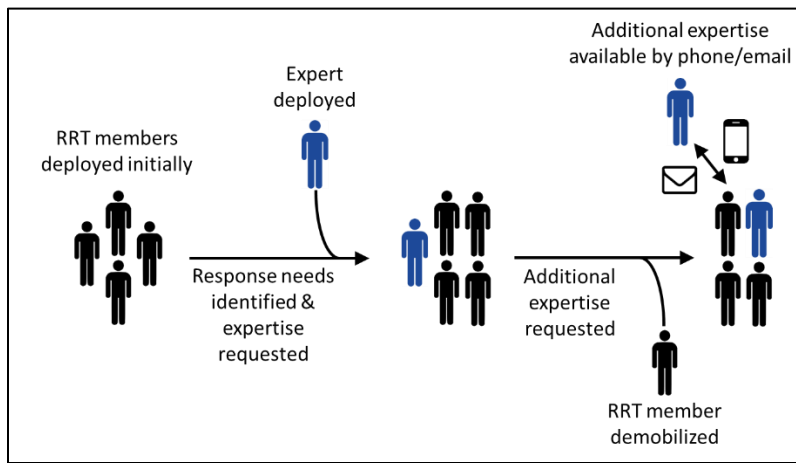
### 4.4.2 RRT Evolution & Demobilization

As the response progresses, the technical support required from the RRT will evolve. The flexible, modular design of the RRT is intended to allow for rapid adjustments to these response changes. Individual responders can be deployed (added) and demobilized (removed), from the field as dictated by the response needs. Figure 8 illustrates an example. Demobilization can occur at the team level or at the individual level; RRT management can demobilize all responders simultaneously or individual RRT members as needed. Demobilization criteria, delineating the

circumstances under which RRT members return from the field, can assist in decision making. Reasons for demobilization may include: sufficient local response capacity to address the response needs, achievement of team or individual objectives, end of the outbreak (e.g., no cases identified during a certain timeframe), safety and security concerns, medical evacuation, etc..

Demobilization of individuals may also occur for the regular rotation of RRT members for rest and recuperation, particularly if the emergency is large or protracted. These need to be balanced with the negative consequences of rapid staff turnover while ensuring team members are still performing and maintaining their mental health and wellbeing. Some factors to consider include work hours, length of time in the field, and any pre-existing rest/relief policies for responders.

Figure 8: Example of RRT member movement to and from the response site



#### 4.4.2.1 Handoff and Transfer of Information

For an ongoing emergency, a handoff report, written by demobilizing RRT members for arriving teammates, can ease the transition from one person to another and maintain continuity of the response. Handoff reports should include (at minimum):

- Key stakeholders and their contact information
- Key meetings (with time and location)
- Overview of the response thus far with details by location (down to local/community level)
- Completed, current, and ongoing response activities and interventions
- Specific gaps identified (If possible, include ideas, plans, and activities to address the gaps)
- Accomplishments
- Challenges (If possible, include tips to address the challenges and work effectively in that location)
- Next steps, future plans or arrangements including staffing and resource considerations

When feasible, demobilizing RRT members should overlap with the arriving RRT members in the field. If overlapping time in the field is not possible, a conference call between the demobilizing and arriving RRT members is a reasonable alternative.

 Maintenance Alert:

Consider creating a standard template that can be used across different responses.



## Key Topics for Discussion

### Evolution

- How will the lengths of deployments be determined?
- What criteria should be used to send an RRT member home/demobilize the individual?
- Who authorizes their demobilization?
- What does each RRT member need to do before leaving the field if...
  - Another RRT member will replace them in the field?
  - There is no replacement?

### Demobilization/End of Mission

- What criteria should be used to demobilize the RRT and end the mission?
- Who authorizes the end of the mission?
- What additional activities must be completed before the RRT demobilizes?

### Handoff and Transfer of Information

- What is the RRT handoff process?
- What information needs to be passed from demobilizing RRT members to arriving RRT members?
- Who is responsible for the planning and logistics for the handoff?

## 4.5 POST-DEPLOYMENT PROCESSES

In the post-deployment phase, three key types of activities are strongly recommended:

- Finalize residual response activities
- Provision of resources (i.e., healthcare, psychosocial support, etc.) for returning responders
- Evaluation and improvement planning

### 4.5.1 RRT Mission Report

Like situation reports and other documents, mission reports help document the response for post-emergency evaluation of the response and to highlight lessons learned. A mission report covers similar information as the handoff report ([see 4.4.2.3 Handoff and Transfer of Information](#)) but indicates the final status of the response activities and any known transfer of activities to local staff and partners. When known, the mission report can also provide relevant post-emergency activities and programs.



Consider creating a standard template that can be used across different responses.

### 4.5.2 Resources for Returning Team Members

During an emergency response, responders may encounter a variety of situations including exposure to a disease pathogen or toxin, other medical issues such as illness or injury, traumatic events, or stressful circumstances due to the chaotic nature and gravity of an emergency. Returning RRT members may benefit from medical care and/or psychosocial support if available. Providing information on accessing available resources and encouraging team members to seek services as needed can facilitate their transition back to their regular duties and daily life. If self-isolation or symptom monitoring is recommended, provide clear instructions on any signs or symptoms to watch for, reporting requirements, and when to seek medical care (22-24).

### 4.5.3 Debrief

An operational debrief or meeting to discuss the RRT member's experience should occur immediately upon return of the RRT members to provide feedback on the RRT response highlighting what worked well and what did not work well. Ideally, the debrief is structure to collect data that can be used to improve future response efforts. The debriefing agenda may focus on gaps and challenges in response activities, action plans to address the gaps and challenges, and assigning responsibility for implementing the action plans. Methods for submitting anonymous feedback should be available for sensitive issues (e.g., an anonymous survey), particularly around management and leadership issues that occurred in the field.

Debriefs can be conducted for individual deployers or in teams. If multiple RRT members are deployed successively, each RRT member should be debriefed upon their return. It is important that debriefs are conducted soon after the team's return before RRT members forget the details of their experience. Whenever possible, the debrief for one individual or group should not be delayed while waiting for the return of other responders, which may result in conducting multiple debrief sessions.

Additionally, if behavioral health resources are available, it might be helpful to have clinical professionals participate in debrief sessions to identify any potential stressors and provide pro-active emotional support and/or resources upon return.

#### Maintenance Alert:

Consider how to formalize the process and store sensitive information over time and across responses.

### 4.5.4 After Action Report

The goal of evaluation is to improve the overall functionality of the RRT during any emergency response. Gaps and challenges identified in the operations should be documented and reviewed by RRT management. Ideally, RRT management will use the findings to modify future trainings and response protocols as needed. If the modifications appropriately address the challenges, the RRT functioning in future responses should improve. If the same gaps and challenges are reported in future responses, additional efforts are needed to effectively address the problems.

Detailed guidance on conducting post-emergency evaluation is available in WHO AAR documents (25,26). Overall, RRT management can consider several factors in their evaluation including:

- Timeliness of RRT deployment after surveillance alert verified
- Quality of pre-deployment activities
  - Pre-deployment brief utility
  - Just-in-time training appropriateness
  - Resource distribution matched to RRT needs
- Quality of response activities
  - RRT completion of indicators
- RRT support mechanisms
  - Communication and reporting
  - Human resources
  - Supplies and equipment
  - Subject matter expertise
- RRT challenges

In order to avoid the same challenges in future responses, it is critical that feedback collected from the evaluation activities guide activities to improve RRT training and operational procedures. Guidance on developing an action plan, including responsible persons and timelines for activities, can be found in the WHO AAR documents (25,26).

---

**Key Topics for Discussion****Responder Resources**

- What medical and/or mental health resources are available for RRT members upon demobilization?
- What administrative support can be offered to returning RRT members (e.g., rest days)?
- What medical and/or mental health resources are available for RRT members upon demobilization?
- What administrative support can be offered to returning RRT members (e.g., rest days)?

**Debriefs and After Action Review**

- What information should be collected during the debriefs? During the after action review?
- What questions should be asked to elicit the information from responders?
- How will sensitive information be handled?
- What is the process to schedule and organize debriefs for responders?
- Who will compile and analyze data from debriefs and after action review?

## 5 RRT MONITORING AND EVALUATION

---

In addition to response debriefs and after action review, monitoring and evaluation of RRT operations is critical to identify successes as well as issues that occurred during all phases of a response. Monitoring and evaluation activities, tools, and deliverables can be used to track internal program activities as well as the RRT's impact related to emergency response readiness, deployment activities, and the outbreak itself. Additionally, reporting to leadership will allow them to understand the value of RRT capacity, its impact, and the cost-benefit of continuous funding/support. Additionally, findings from the monitoring and evaluation and post-deployment debrief and response after action review should contribute to improvement planning and action.

### 5.1 NON-EMERGENCY PHASE MONITORING AND EVALUATION

Tracking non-emergency phase operations documents the true capacity of the RRT program to respond. Databases to capture this information include: the roster, training tracking database (can also be included in the roster), and a database of the application data for future reference. Dashboards that display the status of members' readiness requirements and availability will allow for a more efficient and effective way to identify the most appropriate responders for a deployment. Further, if the roster contains members from outside the agency (e.g., outside the ministry of health), reports for partners can be generated that highlight their agency's contribution to the national emergency response. Elements to track can include:

- Diversity of roles/skillsets represented on the RRT
- Readiness to deploy, training tracking, on-call distribution (if applicable), etc.
- Ministerial/external organization representation (if applicable)

### 5.2 EMERGENCY PHASE MONITORING AND EVALUATION

Similarly, tracking imminent, current, and completed deployments illustrates a more comprehensive picture of the RRT program's impact during the emergency phase. For example, deployment data can illustrate the location, duration, and types of outbreaks most commonly or cumulatively responded to by which RRT members. It can also provide more information for selecting responders for deployments, for example, previous response experience and current availability. Elements to track can include:

- Imminent, current, completed deployments
  - Location, duration, types of outbreaks, who responded, re-deployments
- Timeliness of RRT response
- Activity specific indicators (i.e., number of healthcare workers trained)

Databases for the emergency phase monitoring and evaluation can include a request tracker (e.g. who requested emergency assistance, for what emergencies, and was the request fulfilled), a deployment tracker (e.g. who deployed, for what emergency, etc.), and a post-response database tracking response issues and the corresponding updates/changes to the SOP(s), processes and operations.

---

#### Key Topics for Discussion

##### Monitoring

- What data are required to assess the status of the emergency?
- What data are required to assess the RRT activities being conducted?
- What data are required to identify the RRT needs in the field?

- If travel plans change while in the field, who is responsible to make new arrangements? How is it facilitated?
- How are team dynamic issues addressed from headquarters?
- What data will be requested from leadership to show the impact of your organization and the RRT members on the response? How will these data be collected and maintained?

## **Evaluation**

### *In the field*

- How will RRT activities be evaluated?
- What are the key RRT responsibilities?
- What objectives should the RRT aim to achieve?
- What activities need to be completed to achieve the objectives?
- What deliverables/outputs are expected from those activities?

### *After demobilization*

- How will the lessons learned be recorded and tracked?
- Who will modify the guidelines, SOP(s), processes, and trainings? If multiple people, who assigns the modifications to individuals?
  - Who authorizes the modifications?
  - Who sets the deadlines for modifications?
- How will the process be tracked?

## 6 CONCLUSION

---

A functional multidisciplinary public health RRT requires a number of intricate processes covering both the non-emergency maintenance phase and emergency response phase. Considerations of these process and the establishment of relevant standard operating procedures prior to an outbreak occurring is critical to ensuring an effective and efficient response mechanism. Development requires coordination with the larger emergency response infrastructure and inclusion of key response stakeholders. As this method of RRT establishment and maintenance is a cyclic process continual improvement planning and support is encouraged (Figure 2).

# APPENDIX 1. KEY TOPICS FOR DISCUSSION

---

A compiled overview of topics to be addressed when developing an RRT manual are presented below. As noted in the document above, the participation of key decision makers and stakeholders is strongly encouraged throughout this process. A more detailed process, including SOP development templates, are available as part of an RRT Management Workshop provided by the Emergency Response and Recovery Branch in the Division of Global Health Protection in the Center for Global Health. Contact [RRT@cdc.gov](mailto:RRT@cdc.gov) for more information.

---

## Key Topics for Discussion: Emergency Response System

- Are RRTs included in the emergency response plan?
  - If yes, how does the plan support RRT deployment and response activities?
  - If no, can RRTs be incorporated? Or can an RRT-specific plan be added as a supplement to the emergency response plan?

---

## Key Topics for Discussion: Management Personnel

- Who should be an RRT manager?
  - Are they familiar with the emergency response infrastructure and the personnel with whom they will need to interact?
  - Do they have authority to make key decisions about RRT response activities?
  - Can they authorize funds and/or procure supplies and equipment for the RRT?
- Who is responsible for hiring the RRT manager?
- Where will the RRT manager sit in the overall response structure?
  - Is the RRT manager a full-time job or incorporated in a pre-existing staff's responsibilities?
  - Where does the RRT manager sit during an outbreak response (i.e., what section of the country's emergency response structure)?

---

## Key Topics for Discussion: Financial and Administrative Considerations

### Budget

- What factors should be considered when drafting a budget ([Appendix 3. Budgetary Considerations](#))?

### Employment-Related Issues

- Will the RRT include full-time dedicated responders?
- Will the RRT members be from other employment positions (most common approach)?
  - How will RRT members' absence during mobilization affect regular operations? How will normal work activities be covered?
  - Are any legal contracts or agreements needed to mobilize responders?
    - Is there a clause in employment contracts (if used) that states mobilization for emergencies is part of employment duties? If not, is one needed?
    - What needs to be established to mobilize RRT members from other Ministries or external organizations? Interagency agreements, memorandums of understanding, etc.
- How will RRT members' absence during mobilization affect regular operations? How will normal work activities be covered?
  - Will RRT members be prevented from mobilizing due to normal workload? Is the normal work more important than the emergency response?
  - Will supervisors be reluctant or actively prevent RRT members mobilization?

- Is there a plan in place to handoff daily work to a colleague while mobilized?

### **Compensation**

- Who is responsible for paying the salary of the RRT member when they are deployed?
- How are per diems financed and provided?
  - Are there mechanisms to provide per diem to RRT members prior to mobilization, i.e. an advance?
  - If mechanisms exist, what is the process for doing this and how can that be shared with responders so they can use it?
  - If no mechanisms exist, can a mechanism be set up? Who has the authority to make this decision?
- Will RRT members be given special compensation (financial or other) for overtime, weekend, and/or holiday pay while mobilized for a response?
- Will additional incentives (financial or other) or hardship pay be given?
  - If incentives are offered to deploying RRT members, what will happen with the RRT members (or other staff) who are not deploying or receiving the incentive? Will this cause issues? How will it be handled?

### **Healthcare and Insurance Coverage**

- What access to healthcare will RRT members have if they are injured or become ill while on deployment?
  - If there is a vaccine-preventable disease outbreak (e.g. yellow fever), how will RRT members protect themselves from infection? Will they be vaccinated/have access to vaccination?
  - What if responders refuse to be mobilized because of the risks?
- Who will pay the healthcare expenses?
- Will medical, disability, and life insurance will be provided to RRT members?
- Will RRT members and/or their family be compensated in the case of illness, injury, or death?
- What is the provision of psychosocial support during and post deployment?
  - Consider what crisis support will be needed during large events?
- How will security for the RRT be provided, tracked, and ensured while deployed?
- What is the process for an emergency evacuation due to medical or safety concerns?
  - Who would need to be involved in developing the process? E.g. law enforcement/security personnel, ambulance services
  - Who has the authority to approve the process?

### **Code of Conduct**

- Is there a code of conduct (guidance or policy document on appropriate professional conduct including ethics) for RRT members? If not, how should this be developed and what should it include?
  - Does it cover off-hours while mobilized?
  - Are there different expectations for Team Leaders vs. RRT members? Ministry staff vs. RRT members from other organizations?
- What are the consequences for inappropriate behavior during a mobilization?
  - How are the consequences determined for various levels of offense?
  - When is it appropriate to send an RRT member home (if ever)?

### **RRT Members from External Organizations**

- Which organization will pay wages and salaries while the RRT member is mobilized?
  - Will home organizations be willing to pay salary when the RRT member is mobilized and not covering their normal duties?
  - Can the mobilizing organization pay the host organization to cover salaries during mobilization?



- What legal contracts or agreements with individual RRT members and/or their organizations are needed?

---

**Key Topics for Discussion: Standard Operating Procedure Development**

- What SOP(s) exist for RRTs? Consider general emergency response SOPs, even if not specifically for RRTs.
- What SOP(s) need to be developed?
- Who is responsible for RRT SOP content development?
  - What key decision makers should participate in the development?
- Where will the RRT SOP(s) be kept and maintained for rapid access?
- Who will be responsible for reviewing and approving the proposed RRT SOPs?

---

**Key Topics for Discussion: Staffing: Identify Skills and Roles**

- What are the common disease outbreaks in the country?
- Are there other diseases or emergencies for which the country must be prepared to respond, even if they are not common?
- What roles or positions are needed to respond to these emergencies?
- What skills are needed for these roles?

---

**Key Topics for Discussion: Staffing: Identify RRT Candidates**

- Who currently responds to outbreaks? Is there a specific team or group within your government or outside the government?
- Which other areas within the government have staff with the desired skills (or staff capable of developing the skills through training and experience)?
- Which external organizations may have staff with the desired skills? What agreements (e.g. contracts, memorandums of understanding) will be needed before staff could be mobilized, if any?
- What agreements (e.g. contracts or MOUs) will be needed to have their staff be part of the RRT?

---

**Key Topics for Discussion: Staffing: Candidate Selection for RRT Roster**

- How many people should be selected for the RRT roster?
  - How many people are usually mobilized for a response?
  - How many additional people should be selected? Consider not all staff will be available when needed for an emergency.
- What inclusion criteria will be used to select candidates?
- What exclusion criteria will be used?
- Will candidates need to fill out an application? If yes, what questions can address the inclusion and exclusion criteria?
- What criteria can distinguish potential Team Leaders from the RRT candidate pool?
- Who has the authority to select the candidates?
- Do candidates' supervisors or organizations need to approve their selection? If yes, how will their approval be obtained?

---

**Key Topics for Discussion: Staffing: Roster Management**

---

- What software platform will you use for a database or spreadsheet to collect the RRT's information?
- What information do you have or want in the RRT roster? I.e. what variables are needed in the spreadsheet?
  - How will these variables be categorized?
- How will the RRT roster data be collected?
- How will the roster data be kept up to date? Who is responsible? How often will it be updated?
- How will the roster be replenished to account for RRT member attrition?

---

**Key Topics for Discussion: RRT Training**

---

- What content should be included in the RRT training curriculum ([Appendix 5. Rapid Response Team Training Topics](#))?
- Will the content be different based on the RRT member's role?
- What additional training content should RRT team leads have?
- What aspects of the training curriculum should be mandatory?
- How will the training be financed considering RRT member salary coverage, facilitator salaries, venue cost, etc.?
- Where will you get the content for the training? Are there pre-existing local/internal trainings you can use? Are there external trainings that you could use?
- When should RRT members be trained considering the non-emergency and emergency phases? How often should they be trained?
- Who will organize and facilitate the training?

---

**Key Topics for Discussion: RRT Activation**

---

- What decision-making criteria (factors or data) should be considered in the decision to activate the RRT?
- Who is responsible and has the authority to activate the RRT?
- What procedures can be put in place to expedite the decision?

---

**Key Topics for Discussion: RRT Composition for Deployment**

---

- How will the RRT composition (what roles) and structure be decided?
- Who will decide the RRT deployment selection?
- What factors will be considered in RRT deployment selection?
- What criteria will be used in deciding to deploy support staff with the RRT (i.e. safety/security officers, logisticians, etc.)?

---

**Key Topics for Discussion: Pre-deployment Processes**

---

- What pre-deployment processes are needed to mobilize RRT members?
- What information should be provided to RRT members before they are mobilized?
- What disease-specific training is needed for the top priority diseases?

- What existing materials can be used to develop the training?

---

### **Key Topics for Discussion: Coordination & Reporting**

#### **Coordination**

- When RRT members arrive, who leads response activities in the field i.e. who has jurisdiction?
- What coordination activities should happen if the emergency crosses or is near the national border?
- What information should/can be shared outside the RRT and emergency coordination unit?
  - Who has the authority to make decisions on information sharing?
  - Are there ethical considerations regarding international data sharing?
- What field coordination meetings should the RRT members attend?
- Who are the key partners and stakeholders?

#### **Reporting**

- How often and in what format should the RRT members report to RRT team lead? From the RRT team lead to the RRT Manager (or equivalent at headquarters)?
  - How can the reporting format address the balance between time spent developing reports and time spent doing other response activities?
- What critical information would you request of RRTs regardless of the disease process?
- Who is responsible for compiling the data and writing the report?
- How will safety and security for the RRT be provided, tracked, and ensured while deployed?
- How will urgent requests for data be handled?
  - How will the responsibilities be distributed among RRT members and staff in the emergency coordination unit?

---

### **Key Topics for Discussion: RRT Evolution & Demobilization**

#### **Evolution**

- How will the lengths of deployments be determined?
- What criteria should be used to send an RRT member home/demobilize the individual?
- Who authorizes their demobilization?
- What does each RRT member need to do before leaving the field if...
  - Another RRT member will replace them in the field?
  - There is no replacement?

#### **Demobilization/End of Mission**

- What criteria should be used to demobilize the RRT and end the mission?
- Who authorizes the end of the mission?
- What additional activities must be completed before the RRT demobilizes?

#### **Handoff and Transfer of Information**

- What is the RRT handoff process?
- What information needs to be passed from demobilizing RRT members to arriving RRT members?
- Who is responsible for the planning and logistics for the handoff?

---

### **Key Topics for Discussion: Post-Deployment Processes**

## Responder Resources

- What medical and/or mental health resources are available for RRT members upon demobilization?
- What administrative support can be offered to returning RRT members (e.g., rest days)?
- What medical and/or mental health resources are available for RRT members upon demobilization?
- What administrative support can be offered to returning RRT members (e.g., rest days)?

## Debriefs and After Action Review

- What information should be collected during the debriefs? During the after action review?
- What questions should be asked to elicit the information from responders?
- How will sensitive information be handled?
- What is the process to schedule and organize debriefs for responders?
- Who will compile and analyze data from debriefs and after action review?

## Key Topics for Discussion: Monitoring, Evaluation, and Improvement Planning

### Monitoring

- What data are required to assess the status of the emergency?
- What data are required to assess the RRT activities being conducted?
- What data are required to identify the RRT needs in the field?
- If travel plans change while in the field, who is responsible to make new arrangements? How is it facilitated?
- How are team dynamic issues addressed from headquarters?
- What data will be requested from leadership to show the impact of your organization and the RRT members on the response? How will these data be collected and maintained?

### Evaluation

#### *In the field*

- How will RRT activities be evaluated?
- What are the key RRT responsibilities?
- What objectives should the RRT aim to achieve?
- What activities need to be completed to achieve the objectives?
- What deliverables/outputs are expected from those activities?

#### *After demobilization*

- How will the lessons learned be recorded and tracked?
- Who will modify the guidelines, SOP(s), processes, and trainings? If multiple people, who assigns the modifications to individuals?
  - Who authorizes the modifications?
  - Who sets the deadlines for modifications?
- How will the process be tracked?

## APPENDIX 2. RAPID RESPONSE CAPACITY CHECKLIST

---

Many countries and organizations identify the need for rapid response capacity during a response. This checklist is illustrative in nature, providing examples of key components in the establishment and maintenance of RRTs and can be used to identify gaps in current rapid response capacity to tailor/prioritize capacity development activities.

### Emergency Response System

- Development of national health EOC plans and procedures
- Established national strategic multihazard emergency risk assessments & resource mapping
- Functional disease surveillance system in place
- Laboratory testing available for detection of country priority diseases
- An established specimen referral and transport system
- Effective laboratory national diagnostic network
- Reporting network and protocols available and functioning in country
- An up to date multisectoral workforce strategy is in place
- Human resources are available to effectively implement IHR
- Relevant trainings are available for emergency coordination (e.g., EOC/IMS) and RRTs
- Field Epidemiology Training Program (FETP) or other applied epidemiology training program is in place

### RRT Preparedness SOP: Staffing

- Human resources to manage the RRT
- Key roles and skillsets delineated reflecting country priority diseases
- Multisectoral/multidisciplinary candidate sources identified considering roles/skillsets above
- Candidate screening/intake process established
- Candidate inclusion/exclusion criteria identified

### RRT Preparedness SOP: Rostering Process

- Database platform established for ease/use of data entry, staff selection, and analysis
- Database variables needed to prioritize and select RRT staff
- Collection modality of RRT staff data considering information needed and ease of data entry
- Process and frequency of roster updating established to account for changes over time
- Established strategy for mitigating roster attrition

### RRT Preparedness SOP: Financial and Administrative Considerations

- RRT supervisory approval process for deploying
- Legal contracts/agreements for mobilization (both intra and extra-organizational)
- Mechanism for salary payment and per diem financing while deployed
- Special compensation options while deployed
- Medical insurance/care responsibility and cost
- Disability and/or life insurance while deployed
- Emergency evacuation policy/procedure for those deployed
- Established budget with preparedness and response considerations

### RRT Preparedness SOP: Training

- Curriculum content developed using standardized RRT curriculum model, including:
- RRT Overview and Response Processes
- Epidemiology and Surveillance
- Case/Clinical Management
- Infection Prevention and Control
- Personal Protection Equipment

- Laboratory
- Risk Communication
- Social Mobilization and Community Engagement
- International Health Regulations and Response Stakeholders
- Safety and Security
- Logistics
- Just-in-Time training available for RRTs deploying
- Mandatory vs. recommended trainings identified
- Training budget: compensation for RRT members, facilitation team and venue
- Training facilitators identified
- Frequency, timing, and modality of training curriculum established

#### **RRT Response SOP: Activation and Pre-Deployment**

- Written criteria used to decide if RRT should be activated or not
- Authority process for activating the RRT
- Identified content, format, responsibility for pre-deployment briefings
- Just-in-time training facilitation, repository, and distribution assigned
- Availability, distribution and funding for RRT equipment and supplies
- Process for immediate fund disbursement to allow for immediate deployment

#### **RRT Response SOP: Deployment**

- Established leadership structure responsible for RRT coordination
- Determined frequency and modality of RRT communication and reporting
- Process for monitoring and evaluation of the RRT in staffing and response needs
- Process for RRT travel logistics considering changes during deployment
- Development of standardized RRT deliverables (i.e., mission reports, sitreps)
- Process for team evolution (i.e., standardized handoff, sending RRT staff home, replacing staff)
- Established criteria and process for team demobilization

#### **RRT Response SOP: Post-Deployment**

- Identified timing, modality and responsibility of post-deployment debriefs
- Responder resources considering physical and mental wellbeing and reintegration
- Process (including responsibility) for improvement planning and action

## APPENDIX 3. BUDGETARY CONSIDERATIONS

---

Below is a list of example budget items to consider when establishing an RRT capacity and planning RRT deployments. Please note this budget only focuses on the RRT. As discussed, the RRT is not independent from the emergency response infrastructure and budget; those costs also needed to be addressed but are beyond the scope of this document.

### Operational

- Sustained program funding
- Office space
- Roster management software
- Funding for training
- Information Technology
- Internet connectivity
- Office supplies
- Hot spots
- Hand sanitizer
- Weather appropriate gear
- Personal protective equipment (PPE)
- Standardized forms
- Media printing (poster, pamphlets, etc.)
- Data entry system and reporting (paper vs. electronic)

### Administrative Considerations

- Healthcare, disability, and injury insurance coverage
- Vaccination costs
- Medical care costs
- Mental health care costs
- Medical/security evacuation coverage

### Human Resources (salaries, per diems, etc.)

- Rapid Response Team
- RRT Management
- Driver(s) (if used)
- Translator(s) (if used)
- Security (if needed)

### Equipment - General

- Cell phone
- Cell phone credits
- Laptop/computer
- Global positioning system devices, if any

### Equipment - Disease Specific

- Clinical management supplies
- Environmental management supplies
- Laboratory supplies
- Outbreak intervention supplies

### Transportation

- Flights (if needed)
- Fuel (if using own vehicles)
- Rental vehicles (if needed)
- Travel allowance

### Lodging

- Hotels
- Short term housing (if needed)
- Dual lodging (if needed)

### Meals

- Meals and Incidentals
- Meal Replacements, MREs (if needed)

## APPENDIX 4. RAPID RESPONSE TEAM MEMBER PROFILES

The number of RRT members and the team composition will depend on the type of outbreak, number affected, geographic distribution, and resources available. Team members can be cross-trained and may operate in multiple roles. Further, volunteers at the community level can be considered for participation in certain response activities (ex: community advocates, community focal points, etc.) with proper training and experience. The table below provides examples of potential roles and responsibilities for RRT members.

Team Member	Suggested Qualifications	Responsibilities
<b>Team Leader</b>  (Can be a dual role if deploying with a small number of RRT members)	<ul style="list-style-type: none"> <li>• Experience in emergency response</li> <li>• Trained on team leadership and management in the field</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinating response activities with key stakeholders and other actors in the field</li> <li>• Coordinating team members and activities</li> <li>• Evaluating whether appropriate data are being collected and indicators met</li> <li>• Reporting to headquarters on the team’s activities, challenges, current and expected needs</li> </ul>
<b>Epidemiologist/Surveillance Officer</b>	<ul style="list-style-type: none"> <li>• Trained in epidemiology and, ideally, have experience in disease outbreaks</li> <li>• Familiar with the surveillance system at the national and sub-national levels, the agreed upon standardized case definition, and the standardized tools (including electronic databases, if any) and line list formats</li> </ul>	<ul style="list-style-type: none"> <li>• Reviewing data collected (e.g. line lists) at healthcare facilities</li> <li>• Evaluating and improving (as needed) compliance with standardized case definitions and tools</li> <li>• Identifying at-risk groups, demographics, etc.</li> <li>• Working with and increasing the capacity of local epidemiologists or disease surveillance officers to review and analyze data</li> </ul>
<b>Case Management/Infection prevention and control expert</b>	<ul style="list-style-type: none"> <li>• Clinician, e.g. doctor or nurse</li> <li>• Experience in acute/critical patient treatment, health care facility setup and flow</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating the clinical management of patients</li> <li>• Facilitating the provision of the necessary materials, medications, etc. for healthcare facility functioning</li> <li>• Increasing capacity of healthcare workers to treat patients</li> <li>• Ensuring the use of proper personal protective equipment and utilizing infection prevention and control principles by healthcare workers and the facility</li> </ul>
<b>Communication/Social Mobilization Expert</b>	<ul style="list-style-type: none"> <li>• Aware of historical misconceptions, rumors, and stigma associated with the disease</li> <li>• Understand the national and sub-national leadership structures to engage the appropriate stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• Identify rumors and misconceptions that exist in the community</li> <li>• Identify barriers to acceptance of prevention and control activities</li> <li>• Increase knowledge of disease in the community and encourage engagement in controlling the outbreak</li> </ul>
<b>Laboratory Expert</b>	<ul style="list-style-type: none"> <li>• Understand lab sample collection, transport needs, and testing procedures</li> <li>• Able to teach and demonstrate these techniques</li> <li>• Knowledge of national and sub-national laboratory capacity and locations</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate the process of sample collection, transport, and testing</li> <li>• Teach sample collection, transport, and proper testing</li> <li>• Evaluate laboratory capacity to test for the appropriate pathogens</li> </ul>

Additional roles should be considered for common emergencies faced by the country (i.e., Water, sanitation and hygiene (WASH) experts for cholera outbreaks, veterinarians for diseases of animal origin, etc.)



## APPENDIX 5. RAPID RESPONSE TEAM TRAINING TOPICS

The goal of an RRT training program is to have the RRT members trained and functional prior to a public health emergency. Since the systematic and standardized approach to RRT capacity development is a new concept, there are currently several initiatives in development to establish RRT training by partners (ex: GOARN, EMPHINET, AFENET, WAHO, Africa CDC) and resources will be shared as the training material becomes open access. Of note, CDC has collaborated with WHO Health Emergencies Programme’s Learning Support Team to develop standardized open-source RRT training curriculum including:

- Training of trainers for rapid response teams training (2018): <https://extranet.who.int/hslp/content/training-trainers-rapid-response-teams-training>
- All-hazard rapid response team training package 2.0 (2017): <https://extranet.who.int/hslp/content/all-hazard-rrt-training-package-version-20>

The following training topics can be considered. Regardless of its components, an RRT training program should be designed according to the country’s geopolitical and socioeconomic context, needs, and existing resources to ensure that the most appropriate personnel are trained on relevant material.

Topic	Key Points
<b>Overview of Outbreak Response Infrastructure</b>	<ul style="list-style-type: none"> <li>• Emergency response infrastructure</li> <li>• Key stakeholders involved in outbreak response activities, including internal and external partners</li> </ul>
<b>Common RRT Response Activities</b>	<ul style="list-style-type: none"> <li>• Risk/rapid assessment</li> <li>• Case investigation</li> <li>• Active case finding and contact tracing</li> <li>• Data management</li> <li>• Social mobilization</li> <li>• Clinical management and infection prevention and control</li> <li>• Laboratory testing and transport</li> <li>• Emergency capacity building</li> <li>• Other activities common in country outbreak responses</li> </ul>
<b>Equipment and Standardized Tools</b>	<ul style="list-style-type: none"> <li>• Use of common tools/equipment</li> <li>• Use of standardized forms (understand intended answers)</li> </ul>
<b>Ethics during Emergencies</b>	<ul style="list-style-type: none"> <li>• Confidentiality</li> <li>• Data use and sharing</li> </ul>
<b>Relevant National Public Health Guidelines &amp; SOPs</b>	<ul style="list-style-type: none"> <li>• Outbreak response guidelines, SOPs</li> <li>• Case definitions for common diseases</li> <li>• Alert thresholds for common diseases</li> <li>• Standard procedures, tools, and forms (if available)</li> </ul>
<b>Common Diseases in the Country</b>	<ul style="list-style-type: none"> <li>• Transmission and risk factors</li> <li>• National guidelines, if available</li> <li>• Standardized case definition</li> <li>• Prevention and control activities</li> <li>• Disease-specific equipment and supplies</li> </ul>
<b>Response Challenges</b>	<ul style="list-style-type: none"> <li>• Common outbreak misconceptions and rumors</li> <li>• Nonadherence to standardized guidelines, tools, forms, case definitions, etc.</li> <li>• Pre-existing population vulnerabilities</li> <li>• Technical and communication challenges</li> </ul>

---

<b>RRT Operations</b>	<ul style="list-style-type: none"><li>• Deliverables and measurable activities</li><li>• Data to collect in the field by each sector</li><li>• RRT indicators and metrics</li><li>• Reporting</li></ul>
<b>Community Engagement/ Social Mobilization</b>	<ul style="list-style-type: none"><li>• Working with relevant stakeholders</li><li>• Key messages for health emergencies</li><li>• Media training</li></ul>
<b>Risk Communication</b>	<ul style="list-style-type: none"><li>• Key messages for health emergencies</li><li>• Guidelines for interacting with media</li><li>• Media training</li></ul>
<b>Responder Wellbeing</b>	<ul style="list-style-type: none"><li>• Psychological First Aid</li><li>• Dealing with stress and fatigue</li><li>• Working on a team</li><li>• Safety</li><li>• Security</li></ul>

---

## ACKNOWLEDGEMENTS

---

This document was written and prepared by Ashley Greiner, MD, MPH, Tasha Stehling-Ariza, PhD, and Adela Hoffman, MPH, of the Emergency Response and Recovery Branch of the Division of Global Health Protection in the Center for Global Health. Questions should be referred to [RRT@cdc.gov](mailto:RRT@cdc.gov).

We acknowledge the contributions of (in alphabetical order):

Puneet Anantharam, MPH – CDC CGH/DGHP/ERRB

Dante Bugli, MPH – CDC CGH/DGHP/ERRB

Ian Norton, MD, MPH-TM – WHO Emergency Medical Teams

Cyrus Shahpar, MD, MBA, MPH – CDC CGH/DGHP/ERRB

## REFERENCES

---

1. World Health Organization. (2005). *International Health Regulations*. Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/246107/9789241580496-eng.pdf;jsessionid=C8578F669B345B84C17CCA79F79E536F?sequence=1>
2. Centers for Disease Control and Prevention. (2013). The Global Polio Eradication Initiative Stop Transmission of Polio (STOP) -- 1999-2013. *MMWR Morb Mortal Wkly Rep*, 62(24):501-503. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4604894/>
3. Chunsuttiwat, S. (2008). Response to avian influenza and preparedness for pandemic influenza: Thailand's experience. *Respirology*, 13 (Suppl. 1) S36-S40. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1440-1843.2008.01256.x>
4. Gastanaduy, P., Banerjee, E., DeBolt, C., Bravo-Alcantara, P., Samad, S., Pastor, D., Rota, P.A., Patel, M., Crowcroft, N.S., Durrheim, D. (2016). Public health responses during measles outbreaks in elimination settings: strategies and challenges. *Hum Vaccin Immunother*, 14(9): 2222-2238. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6207419/>
5. World Health Organization Global Task Force on Cholera Control. (2004). *Cholera Outbreak: Assessing the Outbreak Response and Improving Preparedness*. Retrieved from [https://apps.who.int/iris/bitstream/handle/10665/43017/WHO\\_CDS\\_CPE\\_Zfk\\_2004.4\\_eng.pdf;jsessionid=8FF7A5B1C112CC49AE54BB7AACE2099B?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/43017/WHO_CDS_CPE_Zfk_2004.4_eng.pdf;jsessionid=8FF7A5B1C112CC49AE54BB7AACE2099B?sequence=1)
6. Greiner, A., Stehling-Ariza, T., Bugli, D., Hoffman, A., Giese, C., Moorhouse, L., Neatherlin, J.C., Shahpar, C. (2020). Challenges in Public Health Rapid Response. *Health Security*, S8-S13. Retrieved from <https://www.liebertpub.com/doi/10.1089/hs.2019.0060>
7. Global Health Security Agenda. (2020). *Action Packages*. Retrieved from <https://ghsagenda.org/home/action-packages/>
8. World Health Organization. (2018). *Joint External Evaluation Tool: Second Edition*. Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/259961/9789241550222-eng.pdf?sequence=1>
9. Centers for Disease Control and Prevention. (2020). *Global Health - CDC and the Global Health Agenda*. Retrieved from <https://www.cdc.gov/globalhealth/security/index.htm>
10. World Health Organization. (2017). *WHO Emergency Response Framework 2nd Edition*. Retrieved from [https://www.who.int/publications-detail/emergency-response-framework-\(-erf\)-2nd-ed](https://www.who.int/publications-detail/emergency-response-framework-(-erf)-2nd-ed)
11. World Health Organization. (2015). *Framework for a Public Health Emergency Operations Center*. Retrieved from [https://apps.who.int/iris/bitstream/handle/10665/196135/9789241565134\\_eng.pdf;jsessionid=5FE2B0477EBCE01F338AFC6120C51538?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/196135/9789241565134_eng.pdf;jsessionid=5FE2B0477EBCE01F338AFC6120C51538?sequence=1)
12. World Health Organization. (2016). *Technical Guidelines for Integrated Disease Surveillance and Response in the Africa Region 2nd Edition*. Retrieved from [https://www.cdc.gov/globalhealth/healthprotection/idsr/pdf/technicalguidelines/idsr-technical-guidelines-2nd-edition\\_2010\\_english.pdf](https://www.cdc.gov/globalhealth/healthprotection/idsr/pdf/technicalguidelines/idsr-technical-guidelines-2nd-edition_2010_english.pdf)

13. Rose, D. A., Murthy, S., Brooks, J., Bryant, J. (2017). The Evolution of Public Health Emergency Management as a Field of Practice. *American journal of public health, 107*(S2), S126–S133.  
<https://doi.org/10.2105/AJPH.2017.303947>
14. World Health Organization Regional Office for Africa. (2014). *SOP: Standard Operating Procedures for Coordinating Public Health Preparedness and Response in the WHO African Region*. Retrieved from [https://www.who.int/hac/techguidance/tools/standard\\_operating\\_procedures\\_african\\_region\\_en\\_2014.pdf](https://www.who.int/hac/techguidance/tools/standard_operating_procedures_african_region_en_2014.pdf)
15. Rasmussen, S.A., Goodman, R.A. (2019). *The CDC Field Epidemiology Manual*. New York: Oxford University Press. <https://www.cdc.gov/eis/field-epi-manual/index.html>
16. Centers for Disease Control and Prevention. (2016). *Lesson 6: Investigating an Outbreak, Section 2: Steps of an Outbreak Investigation*. Retrieved from Principles of Epidemiology in Public Health Practice: <https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html>
17. World Health Organization. (2003). 3. Roles and Responsibilities in Preparedness and Response. In *Pandemic Influenza Preparedness and Response: A WHO Guidance Document* (pp. 16-23). Retrieved from [https://www.ncbi.nlm.nih.gov/books/NBK143062/pdf/Bookshelf\\_NBK143062.pdf](https://www.ncbi.nlm.nih.gov/books/NBK143062/pdf/Bookshelf_NBK143062.pdf)
18. Homeland Security. (2020). *Homeland Security Exercise and Evaluation Program (HSEEP)*. Retrieved from <https://www.fema.gov/media-library-data/1582669862650-94efb02c8373e28cadf57413ef293ac6/Homeland-Security-Exercise-and-Evaluation-Program-Doctrine-2020-Revision-2-2-25.pdf>
19. European Center for Disease Prevention and Control. (2014). *ECDC Technical Document: Handbook on Simulation Exercises in EU Public Health Settings*. Retrieved from <https://www.ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/Simulation-exercise-manual.pdf>
20. World Health Organization. (2017). *WHO Simulation Exercise Manual: A practical guide and tool for planning, conducting and evaluating simulation exercises for outbreaks and public health emergency preparedness and response*. Retrieved from <https://extranet.who.int/iris/restricted/bitstream/handle/10665/254741/WHO-WHE-CPI-2017.10-eng.pdf;jsessionid=38585A3EB4FCD766D37141864024974A?sequence=1>
21. Centers for Disease Control and Prevention. (2015). *Develop SMART Objectives*. Retrieved from Public Health Professionals Gateway: [https://www.cdc.gov/phcommunities/resourcekit/evaluate/smart\\_objectives.html](https://www.cdc.gov/phcommunities/resourcekit/evaluate/smart_objectives.html)
22. Lopes Cardozo, B., Gotway Crawford, C., Eriksso,n C., Zhu, J., Sabin, M., Ager, A., Foy, D., Snider, L., Scholte, W., Kaiser, R., Olf, M., Rijnen, B., Winnifred, S. (2012) Psychological Distress, Depression, Anxiety, and Burnout among International Humanitarian Aid Workers: A Longitudinal Study. *PLoS ONE 7*(9): e44948. doi:10.1371/journal.pone.0044948
23. Antares Foundation. (2012). *Managing Stress in Humanitarian Aid Workers – Guidelines for Good Practice*. Retrieved from: [https://www.antaresfoundation.org/filestore/si/1164337/1/1167964/managing\\_stress\\_in\\_humanitarian\\_aid\\_workers\\_guidelines\\_for\\_good\\_practice.pdf?etag=4a88e3afb4f73629c068ee24d9bd30d9](https://www.antaresfoundation.org/filestore/si/1164337/1/1167964/managing_stress_in_humanitarian_aid_workers_guidelines_for_good_practice.pdf?etag=4a88e3afb4f73629c068ee24d9bd30d9)

24. Inter-agency Standing Committee (2007). IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings. Retrieved from: <https://interagencystandingcommittee.org/mental-health-and-psychosocial-support-emergency-settings-0/documents-public/iasc-guidelines-mental>
25. World Health Organization. (2019). *Guidance for After Action Review (AAR)*. Retrieved from <https://extranet.who.int/iris/restricted/bitstream/handle/10665/311537/WHO-WHE-CPI-2019.4-eng.pdf;jsessionid=0ADD963604FECBDA23EE585C34119A76?sequence=1>
26. World Health Organization. (2018). *After Action Reviews and Simulation Exercises: Under the International Health Regulations 2005 Monitoring and Evaluation Framework (IHR MEF)*. Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/276175/WHO-WHE-CPI-2018.48-eng.pdf?sequence=1>