

IIRM Medical Care Manual



By Loughborough University in conjunction with the Matthew Good Foundation





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Preface

Over the past 20 years, the road race industry has been witness to a tremendous amount of growth. Road races and endurance events are selling out in record time; the numbers of participants are reaching unprecedented levels. The total number of events held each year in the United States and in Europe has reached levels beyond anyone's expectations. Changes in technology have impacted the way the industry operates. Online registration programs, runner chips, tracking programs and the desire for runners to receive information have added to this growth.

During this explosion of growth, we have also been witness to a heightened sense of concern for runner safety and emergency preparedness. The International Institute for Race Medicine (IIRM) started out with a small group of medical professionals interested in addressing these concerns, and has developed into an international collaboration of medical professionals with the goal of enhancing runner safety through research, education and sharing of best evidence-based medical practice in marathons and other endurance road races throughout the world.

The IIRM has been established to act as a resource for all medical professionals, including: physicians, nurses, physical therapists, athletic trainers, Emergency Medical Service (EMS) personnel, physician assistants and others who work or volunteer at marathons, half marathons, 10Ks, triathlons, charity events and military endurance events.

The IIRM is dedicated to providing educational programs that highlight evidence-based medical standards and guidelines for all types of endurance events. Through their efforts, the IIRM will outline best practices in operational planning and logistics that can be used at all types of distance events. The IIRM will act as a source of information for all events and medical professionals tasked with the care of athletes who are involved in road races.

Chris Troyanos, ATC IIRM Executive Director Medical Coordinator Boston Marathon



About the International Institute for Race Medicine (IIRM)

The International Institute for Race Medicine has been established to act as a resource for all medical professionals, including: physicians, nurses, physical therapists, athletic trainers, EMS personnel, physician assistants and others who work or volunteer at endurance events.

IIRM provides assistance with:

- Educational programs highlighting evidencebased medical standards and protocols.
- Operational planning and logistics for all types of distance events.
- Development and coordination of research projects that will improve our standards of care.
- Providing a source for all events and medical professionals involved in the care of athletes who are involved in road races.

In conjunction with Loughborough University, the IIRM has sought to establish best practice at endurance events and to provide advice for establishing the medical care delivery system.



www.racemedicine.org



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Introduction

This manual, produced by Loughborough University on behalf of the International Institute for Race Medicine, is designed to aid in the establishment of evidence-based best practice guidelines for the medical care at endurance events.

Medical planning for a road race can be difficult. The aim of medical management of mass-participation events is directed at minimising the potential risks to the athlete, while at the same time reducing the impact on local emergency services, thus avoiding the worst-case scenario where emergency services are overwhelmed with casualties from the event. This requires development of a specific medical plan prior to the event to ensure adequate facilities, equipment and personnel are available to provide safe care for the athletes on the course. Worst-case scenarios should always be considered, and plans should include strategies to optimise response times to collapsed athletes on the course.

Many scenarios need to be addressed: some can be predicted and planned for, others cannot. It is hoped that this manual will help provide assistance with the planning of medical provisions for events of all sizes and budgets. With the assistance of many of the world's leading road race medical experts, consensus statements have been proposed based on recent medical and scientific best practice for many common race situations, ranging from treatment of medical conditions to logistics of race medical setup.

The manual aims to provide advice and recommendations based on best practice models in a way that can be tailored specifically to your race and the facilities, equipment and medical resources available. It is very unlikely any two races are the same therefore this manual should be used as a basis for developing and implementing techniques to suit your specific race.

The Matthew Good Foundation has kindly supported Loughborough University to prepare the material contained in this manual in conjunction with members of the Executive, Advisory and Scientific Boards of the IIRM.

General Overview

The general setup of medical provisions at endurance races should follow basic principles and guidelines in accordance with the requirements of the country in which the race is held. Differences in race setup, race size, course length, environmental conditions, medical facilities and available medical staff and volunteers will influence the level of provisions required. When planning a race, some points to consider at an early stage include the following:

- Event organisers should appreciate that the provision of adequate medical care is absolutely central to the planning of any mass-participation race.
- Appointing a medical director to be in charge of the medical team and medical operations. Ideally, the medical director should have a sports and/or emergency medicine background and previous administrative experience conducting the medical operations of an endurance event

 if not, they should seek advice from the IIRM website and from experienced medical directors. If a medical lead/director is not available, then the administrative responsibility for the medical operations could be passed to Emergency Medical Service group providers (such as St. John Ambulance [UK] or the British Red Cross [UK]), where they have experience delivering first aid and emergency care in the field.
- Education for the medical team with appropriate training to deal with common medical conditions encountered in endurance races, ranging from minor issues (such as treatment of sprains and blisters) to potentially life-threatening medical events (such as exercise-associated hyponatremia, exertional heatstroke and sudden cardiac arrest). Many medical staff new to race medicine may not be aware of or have experience in diagnosing and treating medical conditions specific to mass-participation race events. Education strategies can include pre-race briefings, written or verbal instructions about expected medical conditions, and written protocols for problems experienced in road races. The IIRM website can be used for race medical resources and education for the medical team.

- Preparation and planning for worst-case scenarios (e.g., unusually high heat/humidity).
- Collaborating with community agencies for more extreme scenarios.
- More medical issues tend to arise in the final section of the race, so distribute medical staff and equipment accordingly.
- Consider pre-race medical screening. (In some areas, legislation mandates screening requiring a medical examination and/or ECG.)
- The provision of a range of education materials to address participant safety.
 These can be Internet-based and, where appropriate, external to the race materials.
- Ensure local hospitals and emergency departments are aware of the race well in advance to allow them to plan for the likelihood of additional patients transferred from the event. Most Emergency Departments will initiate their own risk assessment to consider the impact the event will have on their core business.
- Involve appropriate emergency medical providers (such as the local ambulance service) at an early stage in planning the race and ensure they are aware of the expected number of people (runners and spectators).
- Ensure race organisers have collaborated with local emergency services (e.g., police and fire brigade) in planning the race. Ensure the plans of the course, routes, medical access and locations of medical tents are made available from the early stages of planning.
- Source appropriate medical equipment to manage common medical problems, as well as any emergency situations that could reasonably be anticipated, especially those more common in exercise.



- Be prepared to alter facilities, personnel and equipment depending on changeable factors such as the environmental conditions or unforeseen changes to the route.
- Know the trends in weather in the local area and have contingency plans in place for unusual temperatures (e.g., higher than normal or more humid conditions).
- Ensure medical plans are coordinated with the overall event plans. This also applies to the emergency action plans, which should be prepared by both medical and event teams.
- Ensure communication plans and devices are prepared and tested in advance and that all are familiar with lines of communication in an emergency.
- Keep appropriate medical records of all athletes seen and all treatments administered by the medical team. This is essential from a medico-legal point of view. Appropriate measures must be in place to ensure the confidentiality of all medical encounters and the medical records produced.
- Use data and experience from previous years to change, modify and improve subsequent races.



Minimum Requirements with John Cianca

www.racemedicine.org/videos/minimum-requirements

Glossary of Terms/List of Abbreviations or Acronyms

ABC – Airway, Breathing, Circulation
ACLS – Advanced
Cardiac Life Support
ALS – Advanced Life Support
AMA – Against Medical Advice
CAD – Coronary Artery Disease
CPR – Cardio Pulmonary
Resuscitation
EAC – ExerciseAssociated Collapse
EAH – Exercise-Associated
Hyponatremia
ECG – Electrocardiogram

ED – Emergency Department **EHS** – Exertional Heatstroke EKG - Electrocardiogram **EMS** – Emergency Medical Service HIPAA – Health Insurance Portability and Accountability Act ICS - Incident Command System **IIRM** – International Institute for Race Medicine MCI - Mass Casualty Incident SCD – Sudden Cardiac Death **SpO2** – Oxygen Saturation by Pulse Oximeter UCC - Unified Command Centre WBGT – Wet Bulb **Globe Temperature**



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Appointment of a Medical Director/ Medical Coordinator

For large races, a medical director should be appointed to lead the medical operations section of the race. This individual will have administrative responsibilities for the medical team personnel, the medical protocols, the medical supplies and provisions, and the medical emergency action plan for the event. Ideally, the medical director should have a background in sports medicine and/or emergency medicine.

Not all endurance races will have or require a dedicated medical director. At the very minimum, the event should provide medical care through an external organization like St. John Ambulance or the Red Cross, or the local emergency medical service provider. The medical support group should have sufficient training in endurance event medicine to coordinate on-site medical care and transfer of medical emergencies to an appropriate health facility.

Responsibilities of the Medical Director

- The recruitment and supervision of the various medical personnel and first-aid services.
- Ensure adequate supplies and equipment are available for medical services at all medical care areas.
- Ensure the correct accreditation and/or licensure of the medical staff volunteers.
- Assist the Race Director in developing a budget for any medical needs.
- Prepare a medical information manual for medical team volunteers.
- Prepare a medical training program available with standard and event-specific guidelines to medical team volunteers to ensure access to up-to-date training.
- Obtain assets (e.g., personnel, medical resources, etc.) to implement the medical plan.

- Develop a communication strategy to coordinate medical response that ensures appropriate communication across the full course.
- Develop a race cancellation/alteration plan with the race director in case of inclement weather.
- Develop a course evacuation and escalation plan in case of emergency.
- Compile and review all medical records created at the event so they can be used for planning subsequent events.
- Coordinate medical services with various hospitals and public safety groups that may support the event.
- Provide the local running community with information to help them prepare for the event.
- Prepare an after-event report for the Race Director, which includes a critical analysis of the medical services and, in particular, any significant incidents. Should also include suggestions for improvement.
- Be present at all key operational meetings.

Responsibilities of the Medical Team

The medical team along with first aid providers and/ or local EMS and public safety support (U.S.) will be the primary health care team providing medical coverage to the runners, spectators, volunteers and officials of the race. Each medical team member is directly responsible to the designated medical coordinators in treatment areas, who are responsible to the Medical Director(s) of the race.

- Attend/review medical training programs prior to race day.
- On race day, wear appropriate ID and the assigned apparel (T-shirt, vest, etc.) that distinguishes the medical team personnel





- Assist with the setup of medical supplies/ equipment in assigned areas.
- Triage of the runners to help determine those who may need assistance.
- Perform all medical treatments and procedures within the scope of each individual's medical training in accordance with the established protocols and guidelines for the event.
- Complete a medical record for each patient reviewed. This should be signed and dated appropriately.
- Maintain communications with the medical team regarding emergency situations, arrival/ departure from assigned areas and packing away of medical equipment at the end.
- Inform the Medical Directors if a patient is receiving medical treatment by anyone other than the volunteer medical staff. This may occur, but is likely to be very rare.
- Assist in the setup and breakdown of medical supplies and equipment once the race is completed.



George Chiampas MD Past President



Structuring the Medical Committee

In large races, the medical setup may require a committee structure. It may not be realistic or conceivable for the medical lead/director to perform all roles. Structuring the medical team will help provide this support. An example of a medical team structure is below. Support, collaboration and input may also be requested from local hospitals and emergency services, as well as local race events.



An alternative for smaller races will likely have fewer positions and is shown below.





General Considerations for Large Races

As endurance races become more popular, participation will continue to increase, therefore placing a greater demand on race organisers and race medical teams. When organising the medical services for a race there are many factors that must be taken into account, although these factors may differ from race to race. Many are described later in the manual.

Some general considerations that should be taken into account:

- More entrants can result in increased medical cases

 Race medical staff and volunteers should be adjusted accordingly. Several affiliated race bodies have recommended a minimum number of medical personnel required (e.g., UKA/runbritain guidelines), however, if this number is believed to be inadequate, then recruitment should be increased. Recruitment of medical staff should always be sufficient to cope with the worst-case scenario to protect the runners.
- Large races may include more inexperienced runners and many charity runners – This depends on entry criteria and may increase the number of runners seeking medical attention particularly in longer races and in unexpectedly warm weather conditions.
- Increased spectators Larger events and more runners will likely mean more spectators. The medical services are also responsible for staff and spectator safety. Therefore the plans should anticipate this.
- Bandit/rogue/unregistered runners Many races may have unregistered runners on the course, although improved race security has decreased these occurrences. In large races the number can be significant; some may require medical treatment and therefore, place additional load on race medical resources. Injured or ill, unregistered runners who are unresponsive may be difficult to identify, and contact with next of kin can also be a challenge.



Command Centre with Chris Troyanos

www.racemedicine.org/videos/command-centre

- Requirement of a medical tent It is advisable to have an appropriately sized sheltered space for medical management in the finish area. The finish area medical facility can be divided into medical stations with cots/beds and the appropriate medical equipment. This will also provide some degree of privacy and protection for medical staff and runners.
- Coordination of a large medical team with different backgrounds – A large race medical team can be quite diverse with volunteers from a variety of backgrounds, medical specialities and race medicine experiences (e.g., in the UK, staff may come from St. John Ambulance, British Red Cross, National Health Service (NHS) and private practices. In the U.S., races usually work with local hospitals, sports medicine clinics, ambulance companies and first aid providers.
- Course fluid provisions Fluids should be provided and distributed along the course to meet the needs of the runners. More runners will require increased drink provisions. A contingency plan should be in place to cope with increased demand, particularly if weather conditions are warmer than expected. It is also incumbent on the medical team to provide appropriate education for runners, as well as race staff and medical teams, on safe fluid replacement; this includes the risks of over-drinking during and after the event.
- Communication with large numbers of runners before the race – Social media has made communications quicker and easier than in the past. Good communication and runner education may reduce the number of medical cases at the race (methods of effective communication can be found later in this document). It is advisable to start communication with runners early, utilising a variety of formats (e.g., email, web resources, social media, leaflets in race packs).

- Mass medical emergency or Mass Casualty Incident (MCI) – Severe weather, unexpected heat, terrorist activities and other unanticipated events affecting large numbers of runners and/ or spectators may lead to a large number of casualties. It is important to have contingency plans in place to manage both injured and uninjured runners and spectators, and to cope with increased demand on medical resources in the finish area and on the course. Involving local government agencies in the planning stages of the race will greatly improve the MCI plan.
- Course medical provisions Medical assistance is likely to be needed on the course, therefore, medical provisions should be positioned around the course at "aid stations," as well as made available through mobile units (bikes, carts, vans and/or ambulances). Provisions should reflect the expected likelihood of incidents occurring, with more provisions and resources positioned in the final portion of the course. Additional provisions may be stationed in remote places that have limited or are a large distance from the main medical station. Try to space out aid stations.



Bicycles with panniers are an effective way of provide mobile medical coverage on your course.



General considerations for small races

Smaller races may pose a different set of issues or problems compared to large races. While there are fewer runners and therefore, fewer medical cases, small races may not be able to fund, supply or have access to medical care personnel and facilities. There are other factors that should be taken into account as well.

- Number of medical staff/volunteers This is likely to be decreased compared to larger-scale races; therefore, more efficient deployment is required. Medical staff with the most experience should be stationed in the finish area at a dedicated medical point. The race organiser should try and ensure that marshals along the course have undertaken basic first aid courses - this should include CPR. Consider the types of medical staff available and from where they can be recruited. In the UK, St. John Ambulance and Red Cross provide medical support to many races. In the U.S., Athletic Trainers, National Ski Patrol, National Bike Patrol, EMS students, medical students and medical residents may be suitable to assist with medical care. Their ability to assist will depend on their qualifications and may mean they are only able to assist with first aid. A list of contacts can be found in the appendix.
- Access to medical equipment What are the minimum requirements and alternatives? Use this guide to determine alternative methods of treatment when specialist equipment is not available. Even basic first aid/medical response services will have basic first aid equipment that can be used in most instances. The readiness of all equipment should be checked in advance of the event, (e.g., equipment function and calibration, supply of consumables, expiry dates).
- Location of race Smaller races may be in locations that can affect both communications and EMS responses. Communication such as cell phone signals may be reduced or not available. Public safety resources designed to support the general public may not be able to support the community and the event at the same time – additional planning and a call for dedicated resources will be needed. For communication, alternative systems such as amateur radio should be considered. Ensure there are alternative arrangements if access to the course is restricted. Meeting with and providing local public safety officials with your medical and logistics plan is a must, regardless of the event size. The same information should also be provided to the local hospitals.

- Coordinated medical communications plan For any medical team to effectively provide support, it is vital this team utilises a tried and tested communications program. This may mean a dedicated medical system using commercial radios or involving amateur ham radio operators as a support group. Contingency plans should also be considered should there be a breakdown of communication.
- Access and transport to hospital With limited medical support on-site, it is likely critical cases will be transported to hospital. Access routes should be clearly planned and hospitals should be made aware of the race.
- Requirements of a medical tent Events should try to accommodate a medical tent in the finish area that is scaled to suit the size of the event. At the very least, there should be a dedicated staffed medical area around/near the finish area.
- Race medical education Are medical staff aware of serious running-related medical cases such as exerciseassociated hyponatremia and exertional heatstroke? All medical staff should be aware of conditions that may occur during a road race (i.e., exercise-associated collapse, exercise-associated hyponatremia, exertional heatstroke) as these may not be commonly encountered in typical medical scenarios. They should be aware of the symptoms, warning signs and also the treatments.
- Educational resources including videos and information sheets can be accessed at the IIRM website (www.racemedicine.org).



Emergency response and security with Tom Sivac

www.racemedicine.org/videos/security

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