Medical Team Volunteers’ Essential Guide

April 17th 2016
Welcome

Thank you for volunteering to be part of the Brighton Marathon Medical Team. This is the 7th Year of the Brighton Marathon and each year it gets bigger and better. But without our medical volunteers it would be impossible to put on a marathon. And so we are incredibly grateful that you have given up your time and expertise to help us provide care for the Marathon and 10K runners.

This guide gives you essential information about the Marathon, the medical plans, equipment and protocols.

Thank you for reading.

Dr. Rob Galloway (Medical Director and A&E Consultant BSUH NHS Trust)
David Bowen (Deputy Director of Medical Services and Resuscitation Officer BSUH NHS Trust)
Rachael Grimaldi (Associate Medical Director and Speciality Registrar in Anaesthetics. Kent, Surrey and Sussex Deanery)

Welcome from Philips

We are delighted to be supporting the Brighton Marathon Weekend and the medical volunteer team. At Philips, we look beyond technology to the experiences of patients, providers and caregivers across the health continuum from healthy living to prevention, diagnosis, treatment, recovery and home care. We unlock insights leading to innovative solutions that help deliver better care at lower costs. It’s a unique perspective empowering us all to create a healthier future.

Large scale events of this nature are not possible without the support of a large network of volunteers, and we are proud to be able to supply medical equipment to enable you to provide the best care possible.

With best wishes for a safe and successful Brighton Marathon Weekend,

Mark Leftwich, Marketing Director, Philips
Thank you from BSUH NHS Trust Interim Chief Executive

The Brighton Marathon is a special day for the City and is a fantastic opportunity to show off the best that Brighton and Hove has to offer. I have immense and absolute admiration for the 16,000 people who take part and between them raise millions of pounds for so many well-deserving causes. I will have everything crossed that 17 April is cool to mild without a breath of wind. Good luck to each and every one of you. I would also like to extend my enormous gratitude to all the people, including many BSUH staff, who volunteer their time and expertise to plan and organise the event itself and provide all manner of support on the day – from handing out bottles of water to providing first aid and medical treatment and care to runners.

Big events in the City like the marathon can be a real issue for the hospital, particularly our Emergency Department, but due to the hard work and huge contribution of these volunteers this has never been the case. On behalf of the Trust I would like to thank St John Ambulance, the medical team, and all their volunteers for their huge contribution, I will be thinking of you on the day.

With very best wishes,

Amanda Fadero
Interim Chief Executive
Brighton and Sussex University Hospitals

Thank you from the Event Director

Thank you from all of us at The Grounded Events Company, for choosing to be part of Brighton Marathon Weekend Medical Team this year and volunteering your support at the Brighton Marathon Weekend. We are passionate about organising the best event we can for everyone involved. This means having as many runners cross our finish line as possible and drawing huge crowds to cheer the runners on, while minimising the disruption to the emergency services and the Royal Sussex County Hospital.

Dr Rob and his team have created what we feel is the best medical plan ever developed for a mass participation running event. Combine this with your support, St John Ambulance and key partner contributions such as Philips, our runners and spectators will be able to enjoy the safest Brighton Marathon Weekend yet.

I really hope you enjoy your time at the event, and thank you again for choosing to be a part of the team.

Kind regards,

Tom Naylor
Event Director – Brighton Marathon Weekend
Managing Director – Grounded Events Company
General Marathon Information

Schedule

**THE START**

<table>
<thead>
<tr>
<th>Key Timings</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.30am</td>
<td>First Park and Ride Buses leave each site for The Start</td>
</tr>
<tr>
<td>7.00am</td>
<td>BM10k and Marathon Baggage trucks open</td>
</tr>
<tr>
<td>7.00am</td>
<td>Toilets, changing tents and concessions open</td>
</tr>
<tr>
<td>8.20am</td>
<td>BM10k Baggage trucks close</td>
</tr>
<tr>
<td>8.30am</td>
<td>BM10k RACE START (Masses and Elites)</td>
</tr>
<tr>
<td>8.40am</td>
<td>Marathon warm-up around stage</td>
</tr>
<tr>
<td>8.45am</td>
<td>Marathon runners assemble in start corrals</td>
</tr>
<tr>
<td>9.10am</td>
<td>Marathon baggage trucks close</td>
</tr>
<tr>
<td>9.15am</td>
<td>Marathon RACE START (Masses and Elites)</td>
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</table>

**THE FINISH**

<table>
<thead>
<tr>
<th>Key Timings</th>
<th>What</th>
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</thead>
<tbody>
<tr>
<td>8.30am</td>
<td>Beach Village and Grandstand seating opens</td>
</tr>
<tr>
<td>9.00am</td>
<td>First BM10k elite runner to finish</td>
</tr>
<tr>
<td>11.25am</td>
<td>First Marathon elite runner to finish</td>
</tr>
<tr>
<td>1.30pm</td>
<td>First Park and Ride buses leave the finish</td>
</tr>
<tr>
<td>6.00pm</td>
<td>Beach Village closes</td>
</tr>
</tbody>
</table>

Travel

The city will be extremely busy during Brighton Marathon Weekend and we recommend all participants and spectators use public transport on Race Day when getting to the start, finish and around the Brighton Marathon and BM10k course. (For Mini Mile Races travel information please see page xx)

Trains

Southern Railway will be laying on additional trains over Race Weekend. A full timetable will be available on their website nearer the time and all rail queries should be directed their way.

There is a train station at Preston Park, a few minutes walk from the start of the marathon. Many routes do stop here, but please do check with Southern Railway before you book your travel.

Brighton mainline station is only a 20 minute walk from Preston Park, or a quick train journey.

Trains run regularly from London Victoria to Brighton station.

If you are staying close to Brighton, many local station travel into the main station, from where you can get a connecting train to Preston Park.

Air

London Gatwick is the closest airport and is 30 minutes away by train (trains run direct from the airport to Brighton mainline station) or 35-40 minutes by car.

Taxi

If you are staying in or near Brighton taxis will be able to collect you and drop you close by to the start area. There will be road closures in place but routes are still possible across the city avoiding these closures and/or ahead of them being actioned. Road closure information will be available soon.

Streamline Taxis – 01273 747474 / 01273 202020

Brighton & Hove City Cabs – 01273 205205

You can find a list of further public transport available and full information via the Brighton & Hove City Council web site.
Bus

Buses will be running on Race Day in and around the city but some routes will be affected by the road closures put in place for the marathon and 10k route. Please check Brighton & Hove Buses web site closer to the event, to find out full information about which services are running and when.

You can find a list of further public transport available and full information via the Brighton & Hove City Council web site.
Aims of the Medical Team and Thanks

Hopefully runners will never need us, but we know that they will and do need us. Although marathon running is generally good for you, pushing yourself over 26 miles can lead to medical problems; both musculoskeletal and more serious.

The medical team are there to provide care to the runners. But at the Brighton Marathon we are more important than just providing individual care. Unlike the London Marathon where there are numerous A&Es within a short distance from the marathon capable of receiving unwell runners, in Brighton there is just one hospital. If there was not a medical team at the race side, not only would individual runners suffer but also the Royal Sussex County Hospital would be overwhelmed and the city would not be able to put on a marathon. This would be especially true if it were a hot day when the expected number of casualties is far higher due to higher numbers of patients with heat stroke.

So our job is to provide care for the runners, treat at scene where we can, refer to hospital when we need to and also to help the city’s health services function as normally as possible during the race. We need to be able to cope with expected surges in demand during the day but also higher than average number of casualties if the conditions are unfavourable.

But the other key aim of the medical team is for the volunteers to have a fun day out whilst getting to see and learn about some medical problems they wouldn’t normally see, whilst providing great care.

To manage the medical coverage and protocols takes a lot of organisation, effort and planning. There are many who need to be thanked, especially those on the medical advisory team and Tim Stevenson and Peter Beaumont who organised the medical protocols and team prior to Rob Galloway and David Bowen taking on the role. But the medical team would not be able to function without the team working with St. John Ambulance. Their professionalism, expertise and commitment to provide care of the highest possible order are second to none.

Organisation of the Medical Team

The Brighton Marathon Medical team is made up of four parts – The Medical and Health Care Professionals (HCPs) who volunteer on the day, St John Ambulance team of first aiders, HCPs and logistics team, a podiatry team & a physiotherapy team. However, the key to the successful running of the medical team is that everyone works as one team and not in their individual silos.

Dr Rob Galloway (A&E Consultant BSUH NHS Trust) is the Medical Director of the Marathon but closely supported closely by a large number of people including David Bowen (Deputy Director of Medical Services) and helping with responsibility for the implementation of the medical aspects of the plan and Rachael Grimaldi (Associate Medical Director) who has responsibility for improving clinical care and governance. Trevor Moss leads the St John team alongside Darren Owen.

The protocols have been written using best evidence from international marathons and have been peer reviewed. To ensure best practice is followed Melanie Ottewill (Head of Clinical Investigations at BSUH) performs the function of the Medical Welfare Liaison Officer with responsibility for reviewing the quality of care provided and organising debriefs for how we can improve the medical cover for 2016.

Externally the medical team and full medical plan are reviewed by SECAMB and Brighton and Hove Council Safety Advisory Group with Adrian Dry (head of operations for Brighton at SECAMB) overseeing our medical plans. A full marathon medical plan has been written which details policies and procedures for running the event. The key information from this for volunteers has been used to write this guide. Anyone who would like more information should email Rob Galloway (drobgalloway@gmail.com).

Management structure on the day

On race day, the Marathon control room manages the whole event – from road closures to water provision. Embedded with this team is the medical control room. St John runs the logistics of this with clinical input from David Bowen and Adrian Dry in control room and the Medical Director remotely by radio. SECAMB ambulances can attend if extra clinical support is needed, but that is controlled by the race day control room so that there is one organisation organising clinical care to the footprint of the marathon area.

The Marathon is split into 7 sections with a medical zone leader responsible for each zone. There are two main medical tents; at the finish line and at Grand Avenue, an advanced first aid tent positioned at the beginning of the charity village and 13 other smaller first aid tents.

There are walking teams based at each first aid post as well cycle response team. Each of these carry defibrillators. There is a large fleet of ambulances (the vast majority of which are paramedic manned). One of the ambulances is an Advanced Mobile Medical Unit.
The Advanced Mobile Medical Unit carries additional resources including a doctor experienced in pre hospital care and who has the capability of performing a roadside rapid sequence induction if required.

In addition, this year we have introduced the concept of an Advanced Cardiac Arrest Team (ACAT). They have a dedicated vehicle and specialised equipment and team. A pre hospital consultant leads that team and it contains specialist equipment such as carbon dioxide monitoring and a LUCAS machine. If after 20 minutes of CPR and there is no ROSC (return of spontaneous circulation) then out of hospital ECMO (Extracorporeal Membranous Oxygenation) is started by a team from the Royal Brompton who are embedded with this (ACAT).

The controllers have 3 main radio medical channels; an ambulance channel, a channel for the first aid rooms and walking teams and a channel for medical advice for volunteers.

Runners will either self-present to the tents or if they need assistance at the roadside, information will be sent by stewards (or via 999) to the control room, who will dispatch the most appropriate resource. Control room may send a foot patrol, standard first aider ambulance, a paramedic ambulance, and advanced medical unit withDoctor, paramedic and more advanced medical equipment (akin to a critical care paramedic ambulance) or a medical team from either of the two main first aid tents.

In addition at the finish line there will be forward incident teams and spotters looking to see if there is a collapsed runner.

A collapsed runner will then be either transported to a first aid room – usually the Grand Avenue first aid tent which is designated as the main receiving tent, or taken to hospital directly if needed.

Scene Management of a Collapsed Runner

Pre hospitals scenes can often initially look unorganised and easily worry people not used to working in a prehospital environment. HCPs should get advice from those most used to working in pre hospital environments. On arrival at a scene the medical team should decide who is leading form a clinical perspective and who is leading from a scene perspective. Action cards showing the roles are shown on the following page.

All HCPs will be wearing tabards identifying their role, so that anyone attending the scene is easily identified.

Medical Clinical Lead Action Card

This role will be undertaken by the most senior clinician on scene and handed over to more senior people as they arrive.

The Medical Director and SECAMB Liaison will be available for advice

Roles

1. Ensure that the patient is getting appropriate care. The delivery of care will be by other HCPs.

   a. In the event of a cardiac arrest, paramedics used to delivering Protocol C for cardiac arrest should do so.

   b. In the event of a cardiac arrest ask for Advanced Cardiac Arrest Team (ACAT). A LUCAS will be part of the equipment of this cardiac arrest team. If after 20 minutes, ECMO will be considered. If not appropriate the default decision will continue on the LUCAS and go to RSCH.

2. Manage patient with specific emphasis on exercise related causes of collapse

3. Liaise with Medical Director for advice

4. Inform Medical Director of patient destination so that RSCH can be informed

5. Liaise with Medical Scene lead so that they can liaise with Control re scene and transport to hospital
Medical Scene Lead Action Card

This role may be undertaken by first SJA or HCP on scene not managing the clinical situation, but will be handed over to more senior members of team as they arrive.

Roles

1. You have a hands off role, liaising on managing the scene in coordination with the stewards so as to best help the clinical lead

2. You must have a radio and be in constant communications with medical control room

3. Work with Stewarding team to ensure:
   a. Access for medical staff and equipment
   b. Dignity for patient
   c. Safety for others in area

4. Liaise with clinical lead and ensure that medical information is getting through to control and medical director

5. Liaise with control re exit of patient to hospital

Equipment available at scene of a collapsed runner

The exact equipment available at the scene of a collapsed runner will depend on which ‘asset’ is sent to the scene.

All ambulances carry oxygen, entonox, suction, simple airway equipment such as NPA, oxygen mask and bag valve mask, first aid equipment and defibrillators. All paramedic ambulances carry a paramedic bag with them which contains a full range of equipment needed for Advanced Life Support as well as standard paramedic drugs bag with the addition of calcium gluconate. These two bags used in combination with oxygen provided and defibrillators should provide all the kit needed on scene in most case. They are shown in following pages. SJA Paramedics will carry morphine.

The mobile medical unit will contain all the standard paramedic kit, but in addition have a paediatric Igel’s, defibrillator capable of doing an ECG and pacing, and intraosseous ‘gun’, an EMMA for guided intubated CO2 management and anaesthetic drugs (suxamethonium, rocuronium, thiopentone, propofol, metaraminol and ephedrine). The ACAT vehicle will contain all of the contents of the mobile medical unit and in addition a LUCAS, the ECMO team and portable ultrasound.

The Medical forward incident teams based at the two main first aid centres will contain paramedic kit bags and drug bag plus an intraosseous ‘gun’ as well as an EMMA.

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Paramedic Kit Bags (Can be used by all HCPs)

<table>
<thead>
<tr>
<th>Adult Airway / Intubation Equipment</th>
<th>Adult Airway / Intubation Equipment</th>
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</thead>
<tbody>
<tr>
<td>Magills ET Forceps</td>
<td>1</td>
</tr>
<tr>
<td>ET tube Size 6.0</td>
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</tr>
<tr>
<td>ET tube Size 7.0</td>
<td>2</td>
</tr>
<tr>
<td>ET tube Size 8.0</td>
<td>2</td>
</tr>
<tr>
<td>Laryngoscope handle &amp; batteries</td>
<td>1</td>
</tr>
<tr>
<td>Laryngoscope blade – mk3</td>
<td>1</td>
</tr>
<tr>
<td>Laryngoscope blade – mk4</td>
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</tr>
<tr>
<td>Bougie Introducer - adult</td>
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</tr>
<tr>
<td>Disposable flexible catheter mount</td>
<td>1</td>
</tr>
<tr>
<td>CO2 Monitor</td>
<td>1</td>
</tr>
<tr>
<td>I-Gel size 3</td>
<td>1</td>
</tr>
</tbody>
</table>

<p>| I-Gel size 4                                            | 1                                   |
| I-Gel size 5                                            | 1                                   |
| OP airway size 2                                         | 1                                   |
| OP airway size 3                                         | 1                                   |
| OP airway size 4                                         | 1                                   |
| NP airway 6mm                                            | 2                                   |
| NP airway 7mm                                            | 2                                   |
| Lubricant (sachets)                                     | 1                                   |
| BVM – adult                                             | 1                                   |
| Sterile white ribbon gauze                              | 1                                   |
| Thomas tube holder                                       | 1                                   |
| Tube check                                              | 2                                   |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Airway roll</td>
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</tr>
<tr>
<td>Disposable sterile scalpel</td>
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</tr>
<tr>
<td>Manual suction pump</td>
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<tr>
<td>Immobilisation</td>
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<tr>
<td>Prometheus pelvic splint</td>
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<tr>
<td>Trauma</td>
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<tr>
<td>Russell chest seal</td>
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</tr>
<tr>
<td>Tuff-kut scissors</td>
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<td>1</td>
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<tr>
<td>Burnshield Face Mask dressing</td>
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</tr>
<tr>
<td>Cling film</td>
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<tr>
<td>Trauma dressing</td>
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<tr>
<td>Trauma dressing (abdo / large)</td>
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</tr>
<tr>
<td>Observation Equipment</td>
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<tr>
<td>Standard Peak Flow Meter</td>
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<tr>
<td>Peak Flow disposable mouth pieces</td>
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<tr>
<td>Blood Glucose machine (with lancets)</td>
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<tr>
<td>Sterile wipes (10 pack)</td>
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</tr>
<tr>
<td>Plasters 4cm x 4cm (10 pack)</td>
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</tr>
<tr>
<td>Alcohol hand gel</td>
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<tr>
<td>Tympanic thermometer</td>
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<td>Thermometer covers 20pk</td>
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<tr>
<td>Pulse Oximeter</td>
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<tr>
<td>Blood Pressure Cuff (multi-cuff)</td>
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<tr>
<td>Paediatric Airway</td>
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</tr>
<tr>
<td>Magills ET Forceps Stainless - Child</td>
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</tr>
<tr>
<td>Stainless Steel Spencer Wells</td>
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<td>OP airway size 00</td>
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<tr>
<td>BVM - child</td>
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<tr>
<td>Breathing</td>
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<tr>
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<td>Nebulising Oxygen mask - child</td>
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<td>2</td>
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<tr>
<td>High concentration oxygen mask - adult</td>
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</tr>
<tr>
<td>High concentration oxygen mask - child</td>
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<tr>
<td>Nasal canula (with tubing)</td>
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</tr>
<tr>
<td>Oxygen tubing</td>
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<tr>
<td>Venturi 5 Oxygen mask</td>
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<tr>
<td>Cannulation / Cricothyroidotomy</td>
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<td>Safety cannula (14g)</td>
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<tr>
<td>Safety cannula (16g)</td>
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<tr>
<td>Safety cannula (18g)</td>
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<td>Safety cannula (20g)</td>
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<td>Safety cannula (22g)</td>
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<td>IV dressing</td>
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<td>Claripore tape (2.5cm)</td>
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<td>3 Way Tap</td>
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<tr>
<td>Disposable tourniquets</td>
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<td>box</td>
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<tr>
<td>Sharps container</td>
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<tr>
<td>Disposable syringe (1ml)</td>
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</tr>
<tr>
<td>Disposable syringe (2ml)</td>
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<td>2</td>
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<tr>
<td>Disposable syringe (5ml)</td>
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<td>2</td>
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<tr>
<td>Disposable syringe (10ml)</td>
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<td>Disposable syringe (50ml)</td>
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<tr>
<td>Blunt drawing-up needle (18g)</td>
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<tr>
<td>Safety needle (22g)</td>
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<td>Safety needle (23g)</td>
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<td>2</td>
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<td>Safety needle (25g)</td>
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<tr>
<td>IV giving Set</td>
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</tr>
<tr>
<td>Alicoprep swabs (10 pack)</td>
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<tr>
<td>Conforming bandage (5cm)</td>
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<tr>
<td>Gauze swabs (5 pack)</td>
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<tr>
<td>Orange bags (small)</td>
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<td>4</td>
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<tr>
<td>I.O Needle</td>
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<tr>
<td>Administration</td>
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<td>Patient Report Forms</td>
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<tr>
<td>Pens (black biro)</td>
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</tr>
</tbody>
</table>

**Drugs Available in Paramedic Drug Bags**
(can be used by all prescribing HCPs)

- **Activated Charcoal 250ml**
- **Adrenaline 1:1000, 1mg/1ml (V)**
- **Adrenaline 1:10000 in 10ml (MJ)**
- **Amiodarone 300mg/10ml (PFS)**
- **Aspirin 300mg Chewable/Dispersible (T)**
- **Atropine 600mcg in 1ml (V)**
- **Benzylpenicilllin 600mg Powder (Amp)**
- **Chlorphenamine 10mg/1ml (V)**
- **Clonidine 75mg (T) Strip**
- **Diazepam PR 2.5mg/2.5ml (RT)**
- **Diazepam PR 5mg/2.5ml (RT)**
- **Diazepam PR 10mg/2.5ml (RT)**
- **Furosemide 50mg/5ml (V)**
- **Glucagon 1mg Powder for Recon**
- **Glucogel 25g (Hypostop)**
- **Glucose 10% 500ml (Fluid Bag)**
- **Glycerol Trinitrate 400mcg metered dose (Spray)**
- **Hydrocortisone 100mg (Amp)**
- **Ibuprofen 100mg/5ml Suspension (Sachet)**
- **Ibuprofen 200mg (T) Strip**
- **Ipratropium Bromide 250mcg/1ml (Neb)**
- **Ipratropium Bromide 500mcg/2ml (Neb)**
- **Lidocaine 1% 10ml (Amp)**
- **Ondansetron 4mg/2ml (V)**
- **Naloxone Hydrochloride 400mcg/1ml (V)**
- **Paracetamol 120mg/5ml Suspension (Sachet)**
- **Paracetamol 250mg/5ml Suspension (Sachet)**
- **IV Paracetamol 1g (Bottle)**
- **Salbutamol 2.5mg/2.5ml (Neb)**
- **Salbutamol 5mg/2.5ml (Neb)**
- **Sodium Chloride 0.9% 10ml (Amp)**
- **Sodium Chloride 0.9% 20ml (Amp)**
- **Sodium Chloride 0.9% 500ml (Fluid Bag)**
- **Syntometrine (Amp)**
- **Tranexamic Acid**
- **Water for Injections 10ml (Amp)**
- **Calcium gluconate 10mg iv for cardiac arrest**
Management of the first aid tents

The smaller first aid tents will see mainly minor injuries. But there is the possibility of more serious conditions presenting. These tents will have a SJA lead based in them, SJA walking teams and HCPs. The smaller first aid tents will have a full range of first aid equipment, a paramedic bag and drug bag, oxygen, suction and defibrillators. Any serious condition should be initially managed at a smaller first aid tent but help asked for immediately via control.

The two larger tents are set up akin to field hospitals. They will have essential kit that you would expect in any A&E department. This will include Intraosseous gun, monitors capable of central thermometer measurement and CO₂ monitoring, portable CPAP and resus trolley equipment organised in an ABC fashion. There will be large amounts of ice for cooling patient and foil blankets for warming.

Also provided will be essential drugs (which are listed below) as well as an ‘istat’ machines capable of doing initial electrolyte analysis.

All kit available that people may be unfamiliar with such as istat machine, will have user instructions available.

The drugs will be managed by our pharmacy team who will be on site in each of the main tents handing out the drugs as required.

### Drugs available at main medical centres (Finish line and Grand Avenue)

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dosage</th>
<th>Format</th>
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</thead>
<tbody>
<tr>
<td>0.9% Saline</td>
<td>1000ml</td>
<td></td>
</tr>
<tr>
<td>Na Cl – 3%</td>
<td>500ml</td>
<td></td>
</tr>
<tr>
<td>10% Dextrose</td>
<td>500ml</td>
<td></td>
</tr>
<tr>
<td>10ml 0.9% Saline flush</td>
<td>ampoule</td>
<td></td>
</tr>
<tr>
<td>10ml 0.9% Saline flush</td>
<td>pre filled syringes</td>
<td></td>
</tr>
<tr>
<td>Na Bicarbonate 8.4 %</td>
<td>50ml</td>
<td></td>
</tr>
<tr>
<td>Drugs for asthma and anaphylaxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salbutamol 2.5mg nebs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atrovent – 500mcg nebs</td>
<td></td>
<td></td>
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<tr>
<td>Magnesium 2g vile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Na/saline 250ml bag</td>
<td></td>
<td>(to make up for the magnesium infusion)</td>
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<tr>
<td>Hydrocortisone 100mg iv</td>
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<tr>
<td>Chlorphenamine 10mg/1ml (V)</td>
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<tr>
<td>Adrenaline 11,000 1mg in 1ml</td>
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<tr>
<td>Cardiac Drugs</td>
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<td></td>
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<tr>
<td>Furosemide 50mg in 5ml</td>
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<tr>
<td>Atropine 3g vial</td>
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<tr>
<td>GTN Spray</td>
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<tr>
<td>Aspirin 300mg chewable, Box of 50</td>
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<tr>
<td>Clopidogrel 75mg, Strip of 16</td>
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<td>Amiodarone 300mg pre filled syringes</td>
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<tr>
<td>5% Dextrose, 100ml for amiodarone infusion</td>
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<tr>
<td>Adrenaline 1:10,000 1mg in 10ml pre filled syringe</td>
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<tr>
<td>Calcium chloride 10ml pre filled syringe</td>
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<td>Antiemetic</td>
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<tr>
<td>Ondansetron 4mg iv</td>
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<tr>
<td>Anti-epileptic</td>
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<td>Diazepam PR 10mg/2.5ml</td>
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<td>Lorazepam 2mg iv</td>
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<tr>
<td>Oral medications</td>
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<tr>
<td>Lansoprazole 30mg, Strip of 20</td>
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<tr>
<td>Paracetamol 500mg, Box of 100</td>
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<tr>
<td>Paracetamol 500mg, Box of 32</td>
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<td>Codeine 30mg, Box of 28</td>
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<tr>
<td>Diazepam 2mg, Box of 28</td>
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<tr>
<td>Intensive care type drugs (NB These drugs will need to be labeled)</td>
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<tr>
<td>Thiopentone 500mg phial</td>
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<tr>
<td>Sterile water 10ml (to make up thiopentone)</td>
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<tr>
<td>Propofol 20ml</td>
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<td>Metaraminol 10mg ampoule</td>
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<tr>
<td>Ephedrine 30mg ampoule</td>
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<td>Sulmethionium 100mg in 2ml</td>
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<td></td>
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<tr>
<td>Rocuronium 50mg in 5ml ampoule</td>
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<td></td>
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<tr>
<td>Drugs for suturing</td>
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<tr>
<td>Lignocaine 1%, 10ml, Box of 20</td>
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<tr>
<td>Hypoglycaemia</td>
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<td>Glucogel 23g (Hypostop)</td>
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<tr>
<td>Infusion stickers</td>
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<tr>
<td>Small anaesthetic stickers</td>
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</tbody>
</table>
In the two main treatment areas having medical management structure in place will aid the safe delivery of care. There will be a large number of volunteers in each tent and so organisation is key.

In each main tent there will be:
- SJA/Tent Lead
- Marathon liaison officer
- Lead Medic
- Clinical Tent Lead
- Triage Doctor
- Triage Nurse
- Medical Forward incident team
- i-Stat technician/Pharmacy technician
- 2/3 resus teams pre allocated (2 in Grand Avenue, 3 at Finish Line)
- Podiatry Lead
- Physiotherapy Lead

The aim of these leads is to aid the flow of patients in and out of the tent. To ensure discharge decisions are being made swiftly and to oversee the deployment of staff.

They will also make sure equipment is working and the required resources are available.

The specific roles are shown below:

**SJA/First Aid treatment centre manager role**

1. Liaise with medical and nursing lead to ensure smooth running of the location.
2. Pre-designate areas for first aid patients, podiatry and physiotherapy patients as well as medical patients.
3. Arrange walking entrance and ambulance entrance.
4. Liaise with the triage teams to ensure that everyone who attends and is more than a social attendance has a patient report form and their attendance is recorded with time of arrival. This can be delegated. All patient interactions are to be written on SJA paperwork.
5. Liaise with medical lead to ensure that discharge decisions are decided promptly.

**Marathon Liaison Officer**

1. When patients arrive take their runner number.
2. Note arrival time and discharge time.
3. Liaise with control about the numbers of runner in the tent and their specific runner ID.

**Medical Lead**

1. Ensures the smooth running of the medical aspects of the medical tents rather than getting too involved with individual patients.
2. Ensure triage is proceeding as planned in the triage policy. If not pre-appointed appoint a triage medic and triage nurse.
3. Ensure that the 2-3 medical and nursing resus teams are set up and know each other and their role.
4. Ensure that if more than two patients need a team to manage them, then the team is organised from non pre-assigned staff.
5. Ensure that the teams are familiar with protocols.
6. As patients come in and are triaged, ensure that there are doctors and nurses ready to see the patients in appropriate time frames.
7. Ensure if an ASCHICE is coming to the treatment centre a resus team is nominated to look after the patient and a pre-arrival checklist is performed.
8. Ensure safe transfer of patients to hospital including use of transfer checklist.
9. Liaise with SJA lead to ensure decisions on patients are being made promptly. Generally, patients should not be staying longer than one hour without a discharge plan (to hospital or home).**Clinical Tent Lead**

1. To work with the medical lead and SJA lead to fulfil the functions described
2. To ensure that the equipment described in the equipment plan is set up as described
3. To ensure that fluids and drugs are available as required
4. To ensure that oxygen and suction is available as required

**PATIENTS SHOULD GENERALLY NOT BE STAYING IN THE TREATMENT CENTRES FOR GREATER THAN ONE HOUR UNLESS SANCTIONED BY LEAD CLINICAN AND WITH DISCHARGE PLANS IN PLACE.**
5. To ensure that the istat is working and that there is a designated istat technician trained in doing istat tests
6. To report any nursing or equipment issue to SJA lead
7. To ensure infection control is maintained in patient area
8. To ensure patient dignity is maintained
9. To ensure an area for distressed relatives is set up and is functioning as needed

i-STAT Technician/Pharmacy Team

1. To perform i-STAT tests and give the results to the clinical teams looking after patients
2. To record details of patients who have had i-STAT tests done and give that information to the SJA zone leader
3. To keep a record of drugs used and drug stock in each of the two main medical tents
4. To make sure that there is a full audit of all drugs used within and outside of the advanced treatment centres

Resus teams

To organise themselves so that if a sick patient arrives roles are pre-allocated. Ensure that other HCPs are part of the management of the sick patients if required

Non pre-assigned HCPs

See patients as they arrive and liaise with medical lead. Prepare to swap into resus teams or be formed into a resus team if more than two/three patients requiring resuscitation arrive

Forward Incident Team (1 Doctor and 1 nurse from the tent to be deployed as needed with SJA team). These will be appointed by tent medical and nursing lead.

1. To liaise with SJA FIT team
2. To treat patients on the course as required and transfer as required
3. At scene to liaise with SECAMB/SJA/Stewards re who is clinically leading and who is scene lead and the link to the control room. Invariably the most senior clinician with pre-hospital skills will lead and an experienced member of team will be scene lead.

4. The 2 leads will decide on additional assets required and request them via control

Triage Teams

There is the potential for there to be large numbers of patients arriving in short spaces of time at the two main tents.

Patients will present either by ambulance, Forward Incident Team or self-presenting. All patients will go through triage unless the ambulance or Medic on the Forward Incident Team states that the patient is high priority and they will go direct to the resus area.

All self-presenting patients will see a triage team made up of a Doctor, nurse and SJA senior.

They will categorise the patients by a quick history and visual observation into:

a. SJA first aid treatment – e.g. abrasion. Patient Report Form started and details of patient taken by SJA First Aider.

b. Podiatry team e.g. blisters/subungal haematoma. No other medical problems.

c. Physiotherapy team. E.g. ankle pains/twisted knees, when there is no evidence of a fracture. No other medical problems.

d. Medical team. Unwell patients & limb injuries with potential fractures.

If there is a difference of opinion in triage decision, the default position is always to see the medical team.

Once a patient is triaged they can be moved across to the medical teams at the request of physiotherapists/podiatrists/SJA team. All SJA patients and HCP cared for patients must have a SJA patient report form completed.

Patients deemed to need to see the medical team will be triaged into one of three categories:

P1 – Immediate
P2 – Urgent
P3 – Delayed
The system used to triage is as follows:

1. Are they walking, if so P3
2. If they are not walking, are they breathing. If No, do basic airway manoeuvres and they are P1. They need immediate treatment.
3. If they are walking and breathing, what is their resp rate? If it is <10 or more than 30, then they are classified as P1.
4. If their Resp Rate is between 10–30, what is their capillary refill time/heart rate?
   - If HR is more than 120 seconds or capillary refill time > 2 seconds, then they are P1.
   - If HR less than 120 and capillary refill time less than 2 seconds then they are classified as P2.

This is a dynamic process and patients can be moved across the three categories.

The patients will be moved into the specific areas for each category in the main tent.
- P1 – into the resus
- P2 – into the majors type area
- P3 – trolleys / chairs

Once they are in their triage category areas they will have a full set of observations performed and a NEWS score calculated.

The treatment centre lead clinician will organise the treatment of the patients based on the resources versus demand. We anticipate that as we will have a large number of highly trained medical resources then, there will not be delays in seeing patients.

This is summarised in the diagram below. Please note, if someone is not breathing, full ALS CPR is commenced.
Layout of the first aid tents

GRAND AVENUE - MEDICAL MARQUEE: 9M X 42M

St John post 7
Major Treatment

2 x DPJ
3 x PJ

Location 5.1

FINISH LINE, MADEIRA DRIVE - MEDICAL MARQUEE: 6M X 66M

FINISHER FLOW -> -> -> -> 163m Heras Fence sections with 32 Heras Fence Feet
30 Chairs, 10 Tables
A note about SJA First Aiders

The historical view that some people have held about first aid societies and the skills and attitudes of their members is out-dated and incorrect. The professionalism of the SJA team is second to none. They have great skills (and these vary amongst their members) but also recognition of where their clinical competencies lie and where they need advice and help. The SJA team leader can provide info to all HCPs on specific skills within their tents.

The aim of the tents is to have one team made up of SJA volunteers and non SJA HCPs. Please can HCPs involve SJA first aiders in the management of the sicker patients in P1, 2, 3 areas - they will learn lots from the HCPs but also be able to contribute greatly to the care of the patients.

Podiatry Team

Podiatry Team Leader is: Mr Tom Austen. They are positioned in the two main tents and also the charity village. They provide great support for any ankle and foot injuries. They will refer patients direct from triage but may ask for medical advice. Similarly HCPs/SJA members are encouraged to ask advice from them.

Podiatrists attending:
4 x Lead Podplus Podiatrists:
8 x Supervised 3rd Year Brighton University Podiatry students
(A maximum ratio of 1 qualified Podiatrist to 3 students)

Scope of Practice:
The podiatrist in attendance on race day may be able to treat or advise on the following:

- Ageing feet
- Athlete’s Foot
- Biomechanics
- Blisters
- Bunions
- Callus
- Chilblains
- Corns
- Diabetes (foot related)
- Footwear
- Fungal infections
- Gout
- Heel pain
- Ingrown toenails
- Osteoarthritis
- Podopaediatrics (children’s feet)
- Rheumatoid arthritis
- Sports medicine
- Sweaty feet
- Toe deformities
- Toenail cutting
- Verrucae
- Walking and hiking
- Working feet

Please note: some of these areas are treated by specialist podiatrists only.

Please visit the following information leaflets provided by the Society of Chiropodists and Podiatrists.

Guidance on what a Podiatrist does:
http://www.scpod.org/EasysiteWeb/getresource.axd?AssetID=3521&type=full&servicetype=Inline

Role of The Physiotherapy Team

- Dawn Buoy, working with Body Rehab, Studios leads the physiotherapy team. They will provide 6 members of fully qualified physiotherapy staff. At the start of the event they will be split into two groups of three in each tent then once the main bulk of the runners have passed the Grand Ave one member of staff from this tent will head to the finish line.
- They can treat all forms of musculoskeletal injuries to all parts of the body and provide invaluable support to the medical team and runners.
- They have strapping, taping, alcohol wipes and adhesive spray required in order to treat the runners. They will also have crutches available.
- Runners are triaged to physiotherapy by the medical triage teams.
- They will refer back to medical staff if they recognise a physiological deterioration in the patient or if they become disorientated or confused.
- HCPs can also ask physiotherapists to review patients they are seeing once they are happy that the runner is medically stable.

Responsibility of Patients

We are working in close co-operation across SECAMB, NHS, SJA and Brighton Medical Marathon Team.

Patients whom SJA members are looking after and do not ask for help from the medical team remain the responsibility of SJA. However, if there are any concerns at all about patients then advice should be sought from health care professionals.

However, the ethos of the day is close liaison and we would like all concerns reported as soon as possible to HCPs.
Once HCP’s have been informed about a patient and SJA member would like a review they become the responsibility of the Brighton Marathon Medical Team.

Patients being transported to hospital by SJA ambulance without an HCP shall only happen in low risk patients and must be sanctioned by an HCP. Unescorted SJA ambulances can only give oxygen and entonox and so they cannot take people who need fluids and the default position will be HCP escort.

However, if they do go unescorted, they will remain the responsibility of SJA until a formal handover at hospital and the hospital has taken over responsibility and released the crew.

Patients transferred by SJA to hospital with a medical team stay under the responsibility of the medical team until they formally hand over the patient at the hospital. Once handed over, then the default position is to leave the hospital team to manage the patient.

If the hospital is overwhelmed with patients due to the marathon and you are asked to stay, please let control know and only stay under express request of the Emergency Medicine Consultant. This is especially of importance if you do not work at BSUH NHS Trust.

If a patient is so sick and needs the transport facilities of a SECAMB ambulance (e.g. a critical care paramedic) then once the SECAMB paramedic has arrived and a handover has taken place, they take responsibility for the patient. There may be occasion when they will request a doctor to escort the patient with them e.g. post ROSC for sedation and the doctor will accompany the transfer and then take joint responsibility with SECAMB. Once the patient is formally handed over at the hospital, then the responsibility passes to their team.

**Designated Hospitals**

Unless specifically directed all unwell patients will be sent to RSCH, Brighton. There may be occasion to require the use of Worthing Hospital, but this is unlikely and only if there are problems with offloading patients at Brighton.

Patients needing primary care advice beyond what is available at the race, should be advised to call 111 or go to the treatment centre by Brighton Train Station which is open 8am-8pm.

**Major Incident Procedure**

In the event of a major incident, control will formally declare a major incident and formally hand over responsibility to SECAMB lead.

The senior doctor at the scene should assume the role of bronze command (until formally handed over to SECAMB) and organise triage as per standard major incident triage systems.

A major incident administration pack will be kept in the Advanced Mobile Medical Unit and can be used as needed. All other HCP’s should stay in their current position until otherwise directed.

**Clinical Governance**

It is vital that all members of staff have indemnity insurance provided by either their union for non-doctors or MPS/MDU for doctors. It is important that any concerns about the medical care or suggestions for improvements are brought up with the Medical Director or Mel Ottewill (Melanie.Ottewill@bsuh.nhs.uk), who will investigate any serious incidents and report on how we can improve the 2017 marathon. There will be a formal debrief for all interested parties on Monday 25th April at 2pm at the Hilton Metropole, but if there is a serious incident there will be a hot debrief on Monday 18th April at 10am in the Brighton Marathon offices in Brighton.

**Please remember** – although you are working in facilities akin to field hospitals, you are often working outside of your level of comfort. Please do not ever work beyond the level of competence you have and ask for help early. We have a large number of very experienced and senior doctors on hand for advice.

**Fatality Procedures**

It will be very rare to stop CPR on a marathon runner or a member of the public in a public area prior to transfer to hospital (see cardiac arrest protocol). Invariably a death will therefore only be confirmed in hospital.

The Marathon Medical Team doctor who attends the hospital will inform the Medical Director and St John Ambulance Event Lead, who will in turn inform the Race Director and all necessary parties in Event Control. The Race Director will inform Brighton Marathon Media Office and senior management as appropriate. The Medical Welfare Liaison Officer will co-ordinate all activities around a death to a runner on behalf of GEC Ltd.
Any HCP involved in the care must not release any information to the press or public. The Medical Director will follow the procedure as documented in the full medical plan and available on request.

The Brighton Marathon Research Group

The Brighton Marathon Research Group is the official research team attached to the Brighton Marathon. It comprises a group of enthusiastic people looking to further advance our knowledge of the effects of Marathon running, the public health benefits of mass participation exercise and how what we can learn can be extended to the general public.

Although only five years old, the group have published a review paper on heat stroke, have written a position paper for the Faculty of Sports and Exercise Medicine on heat stroke and published posters – on runners knowledge of potential dangers of marathon running. Students from BSMS have also participated in research with the group during their year four independent research project looking at the benefits of marathon running and the medical complications. This year we have written a review on the impact on the renal system of running and had two posters at the European Society of Emergency Medicine Conference in Italy.

Each year we assess the medical forms of collapsed runners and aim to follow a number of them, as well as analyse the results of our blood tests we do to hone our advice to runners and volunteers.

Rachel Grimaldi leads the research team and we are looking to undertake more projects. If you are interested, please contact us at medicalteam@brightonmarathon.co.uk

We are excited to be associated with the new Sussex centre for sport and exercise science and medicine run by Professor Yannis Pitsiladis, of the University of Brighton and hope to forge collaborative work between ourselves in the future. If anyone is interested in joining the group, please get in touch. https://www.brighton.ac.uk/sesame/index.aspx

A word from SJA

SJA need more HCPs in their organisation to assist with their bigger duties but also to help in units to give clinical support to the members and to work with them on some of the local duties. There is support for all HCPs – they have clinical leads for Nurses, Doctors and Paramedics but all HCPs are welcome and there will be a discussion with the senior clinical lead as to how individual skills can be used and what training they can give you to enhance your basic first aid skill and develop any other competencies that will help you and the organisation. If you want to join, go to the website www.sja.org.uk.

Introduction

About 1 in 20 runners will contact the SJA first aid team at some point during the race. While you could conceivably be confronted with any sort of emergency, it should go without saying that there will certainly be trends of ailments specifically related to running a marathon.

Triage

You will not be expected to manage patients, some of who are potentially very unwell without the help of health care professionals. All patients who arrive feeling unwell need to be reviewed by an HCP. Please do a set of observations and record a NEWS score. The NEWS score is made up of standard observations. Put them on the observation chart and the chart gives you a number for each observation. Add the numbers together and that gives you a NEWS score.
Observation chart for the National Early Warning Score (NEWS)

<table>
<thead>
<tr>
<th>NEWS KEY</th>
<th>NAME</th>
<th>D.O.B.</th>
<th>ADMISSION DATE</th>
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There are also podiatrists, physiotherapists, nurses and doctors to review any musculoskeletal problems that you are unhappy dealing with. Please do not discharge anyone in pain or unable to mobilise without referral to expert advice.

Social

Many runners will use the first aid post as a place to stop temporarily to drink, tie a shoelace, request a dressing for self treatment or other very minor issues.

Topical

Blisters are extremely common presentation and you should be prepared to deal with them swiftly. Most will have popped prior to the runner arriving and will only require a plaster or other adhesive dressing to provide padding/comfort to allow the runner to complete the race. If an unpopped blister is somehow preventing the runner from performing to their liking, it should only be popped under aseptic conditions, and the skin left in place as padding and protection. They should be encouraged to be assessed by an HCP at the finish line. There will be podiatrist in the finish tent as well as at Grand Parade where expert advice can be obtained. SJA first aiders will not be inserting needles into blisters but referring to HCPs.

Runner’s nipple can occur in men or women and is due to repeated rubbing of clothing over the nipple. The main complaint is irritation to the nipple area, but there may be erosion of the skin and even bleeding. The most effective treatment is to cover the area with a plaster (or two). Ensure the area is dry prior to application. You may need to trim hair slightly in some patients in order to get the plaster to stick. Try and avoid elastoplast, as there is greater friction on the backside of the plaster which may cause the shirt to catch on it.

Anywhere skin rubs against skin or clothing over a marathon distance is bound to produce irritation. A great number of runners will request Vaseline to decrease friction in these areas. At least one member should be dedicated to providing Vaseline outside the post on the edge of the route, allowing runners to carry on after literally just a few seconds of stopping or slowing down.

A subungal haematoma is a collection of blood under a finger or toenail. These can occur during running, especially on a large downhill section. The more quickly they develop, the more painful they will be and the more likely to present for treatment. If you have a senior nurse or doctor on station they may be happy to drain the haematoma with a sterile/hot paperclip or needle. As the nail itself does not have any nerve endings this can often be done...
without any anaesthetic medicine. All runners should be advised to seek aid from a sports medicine physician or podiatrist once at the finish line. It is not uncommon of the haematoma to need to be redrilled or the nail removed altogether, and this will require local anaesthetic and can only be done by a trained HCP.

**Musculoskeletal**

Cramps are common and may be severe. Single spasms respond to stretching the relevant muscle, often best achieved by assisted walking. If you have a physiotherapist on station, you should consult them and ask for advice. If the station is not busy, you may be able to get them to teach you a bit more about cramp management. Repeated cramps need treatment with fluids and sugar (usually oral). Massage does not help unless fluids are given first. Very severe cramps in a collapsed runner may require IV fluids and even IV medications. The patients should be referred to the major treatment centres for on-going care, but it is unlikely that they will need to go to hospital.

Bone pain, typically in the foot and shins, may indicate a stress fracture and the runner should be cautioned about continuing. There are numerous other running related injuries to the ligaments and tendons of the lower leg or foot that are beyond the scope of this text. Specific sports medicine physicians will be on hand at the major treatment centre and finish line tent to deal with runners who cannot continue due to musculoskeletal pain.

**Constitutional**

Prolonged exertional stress on the heart, lungs and other major organs of the body will undoubtedly result in patients presenting with a variety of ailments. There are certain ones which you should keep in mind and be prepared for.

**Do not give NSAIDS (ibuprofen/voltarol/neurofen/aspirin) to any runner during a race as it affects the gut and kidneys. Give paracetemol only for MSK problems.**

**Chest pain**

While the majority of runners are quite physically fit, there is always the possibility of any one of them suffering chest pain related to angina or a new heart attack. If you suspect this (central chest pain, shortness of breath not settling, etc.) then you should request a paramedic/doctor review.

**Gut symptoms**

Diversion of essential blood flow to the muscles over a period of time can cause abdominal cramps, vomiting and diarrhoea. These may need to be treated with oral or intravenous fluids or anti-sickness/anti-diarrhoea medications at the two main medical centres.

**Hypothermia**

If the weather is cold or it is quite windy it is not uncommon for runners to drop their body temperature quite significantly. Typically this resolves with a warm environment, foil blankets and a warm drink. Any runner with confusion should have their core temperature (see below) and blood sugar checked and referred to a Health Care Professional.

**Exercise Associated Collapse**

It is not uncommon for runners who put extra effort into their running just before the finish line to collapse as soon as they stop running. When you first get to these patients they tend to look awful with grey complexion, decreased level of consciousness and very fast heart rate. Amazingly the vast majority will recover in a couple of minutes simply by raising their legs and feet in the good old-fashioned shock position. It is well known that this occurs due to an unusual reflex in the blood pressure regulating system and little else is required for their care. There are however a subset of patient who present similarly but may potentially be very unwell and you should be suspicious if your patient is not getting better very rapidly. You must get a senior HCP advice ASAP.

**Exertional Hyperthermia**

Any runner who generates more heat through exercise than their body can get rid of will necessarily have a rise in core body temperature. This is more likely to occur during warm, humid weather but can occur in any marathon. Small rises are tolerated well (up to 38 or 39 degrees Celsius) but beyond that, the body’s temperature regulating systems can start to fail, producing a true medical emergency. Any runner who presents with confusion must have their core temperature and blood sugar checked.

Although many first aiders are familiar with ear probe (tympanic) thermometers and skin temperature test strips these devices are not sufficiently accurate to use in these patients. Several scientific studies have shown that the only reliable way to determine core temperature is by using a rectal thermometer.
Every station and doctor will be issued with a digital thermometer and disposable probe covers. Patient privacy and dignity shall be maintained and where possible a chaperone should be present when assessing temperature in the opposite sex of the care provider. Rectal temperatures will only be taken by a nurse/doctor/paramedic.

For temperatures under 40°C and in patients who are sufficiently alert, treatment should commence with cooling measures and close observation. There is no place for paracetamol in the treatment of exertional hyperthermia.

For temperatures over 40°C or anyone with a decreased level of consciousness or cerebral irritation (e.g. confusion, agitation, disorientation), this is a medical emergency and you should notify the doctor on station immediately.

Hyponatramia
This is a condition of low salt and is due to excess drinking of water or low salt solutions. Many runners, especially on hot days, tend to drink more fluid than is required in hopes of preventing dehydration. These patients present as confused, but without raised temperature and their vitals signs are relatively normal. The main medical tents will have a special device on hand which is able to measure blood salt level and you should consider transfer of patients to one of them if you suspect this situation after ruling out problems with temperature or blood sugar. Take note that although sports drinks do contain salt as well as sugar, that the concentration is still well below that of normal blood and drinking them may make the condition worse.

Summary
Much of what you are called to attend to will be the usual fare which you are likely quite experienced in and very capable of managing. Endurance events bring with them special medical conditions which you may not have seen before, which is why there will be such a significant presence of medical specialists on this duty.
may be erosion of the skin and sometimes bleeding. The most effect treatment is to cover the area with a plaster (or two). Ensure the area is dry prior to application. You may need to trim hair slightly in some patients in order to get the plaster to stick. Try and avoid elastoplast, as there is greater friction on the reverse side of the plaster which may cause the shirt to catch on it.

Anywhere where skin rubs against skin or clothing during a marathon distance may produce irritation. A great number of runners will request Vaseline to decrease friction in these areas. For both this and runner’s nipple you should not need to be involved, unless asked to do so by a first aider.

A subungual haematoma is a collection of blood under a finger or toenail. These can occur during running, especially on a large downhill section. The more quickly they develop, the more painful they will be and the more likely to present for treatment. You may be asked to assess the haematoma for drainage to allow the runner to continue. As the nail itself does not have any nerve endings this can often be done without any anaesthetic drilling it with a sterile/hot paperclip or needle. All runners should be advised to seek aid from a sports medicine physician or podiatrist once at the finish line. It is not uncommon for the haematoma to need to be re-drilled or the nail removed altogether, and this will require local anaesthetic.

**Musculoskeletal**

Below is some general guidance on dealing with running related musculoskeletal injuries. Specific sports medicine physicians will be on hand at the Grand Avenue and Finish Line ATCs to deal with runners who cannot continue due to musculoskeletal pain. Feel free to contact them by telephone to discuss management of running related injuries (phone numbers at end of document).

When dealing with pain in endurance runners, it is widely agreed that NSAIDs should be avoided for the first 24 to 48 hrs or until volume status has completely normalised to avoid renal insult.

**Muscle Cramp**

Cramps are common and may be severe. The exact aetiology remains somewhat of a mystery. There is a theory about glucose deficiency and electrolyte imbalance, but there is very little evidence for this. The most likely explanation is altered neuromuscular control due to repetitive muscle use. The mainstay of treatment is passive stretching using the skills of the physiotherapy team. An excellent review can be found at: www.ncbi.nlm.nih.gov/pubmed/18981039

If there is specific medical evidence pointing to glucose depletion or fluid dehydration, then intravenous fluids and oral glucose can be given. At each main tent there will be specialists in sports medicine – please get guidance from these specialists in difficult cases.

**Shin Splints:**

Shin splints are commonly referred to as lower leg pain in athletes, especially associated with running. This is a symptom and not a diagnosis. The commonly pathologies that cause “shin splints” are detailed below.

**Medical Tibial Stress Syndrome:**

As the name suggest this is medical tibial pain usually localised to the lower 1/3 of the bone with some swelling associated with periostitis. The treatment is rest and simple analgesics. Pain is often more diffuse than stress fractures.

**Stress Fractures**

A stress reaction or fracture can arise anywhere along the tibia, foot or femoral neck. It is a described as a crescendo pain worse with increasing distance run and starting earlier with progression of training. There may or may not be swelling and bruising associated with this injury, and if present often suggests complete fracture. If these features are present, discontinuation of the race and further investigation are warranted. Physiotherapists can help advise and give crutches to patients so they can get home and rest and then decide if they need A&E if on-going pain.

**Exercise Induced Compartment Syndrome**

Exercise induced compartment syndrome causes pain to the lower leg, which the athlete is unable to run through, coming on after a reproducible running time and distance. It commonly affects the anterior, and less commonly the posterior compartments with pain and increased tension in these areas. It is caused by a rise in pressure in the compartments, which have limited ability to expand due to fascia surrounding them. The treatment is rest and monitoring until pain free and though the condition is dramatic, the symptoms settle quickly with rest.
If the pain does not settle, then the patient may need to be referred to hospital, as there is the potential risk of muscle breakdown, release of creatinine kinase and renal problems.

**Nerve Entrapments**

Nerve compression can also present with lower leg pain with associated numbness in the distribution of the nerve affected. It is confirmed with neural tension tests and percussion tests over tunnel and sheath where the nerve runs. Ensure that footwear is not too tight and rest although the athlete can continue with the race.

**Radiculopathy**

Referred pain from the back should also be thought about, especially in individuals with previous back pain and discogenic history. Neural tension tests will confirm the history. Physiotherapy manipulation can help with the treatment. Athletes can continue with the race.

**Vascular Problems**

In the elderly, pain can come on in the legs with exertion and mimics claudication. In the young this is commonly due to popliteal entrapment. Examination will usually be normal in the young, in the elderly assess for signs of peripheral vascular disease. Continuing will depend on how quickly the patient recovers.

**Patellofemoral Knee Pain:**

Usually insidious onset presenting with vague aching pain over anterior or lateral knee, in severe cases, it may cause quadriceps inhibition and for the knee to give way. There is often biomechanical mal-alignment and a hyper-mobile patella. There are often multiple factors involved and athletes can continue running if able to do so.

**Ilio-Tibial Band Syndrome:**

Upper knee and lateral leg pain associated with running, which is worse on running downhill. In women, the pain may be more proximal, due to the wider pelvis. This is also a chronic condition associated with increasing exercise and abnormal biomechanics. Athletes that are able can continue.

**Tendinopathies:**

Commonly affect the Achilles and medial and lateral tendons of the ankle. This is an overuse injury which causes abnormal biomechanics. Pain is localised to the tendon affected. Diagnosis is made based on pain on stretching the tendon or on resisted movement. Any symptoms suggesting acute rupture including thunderclap pain, bruising or palpable gap would result in ending the race for the athlete.

**Acute Inversion Eversion ankle injuries:**

Mechanism of injury is important to establish injury pattern. The Ottawa ankle rules for the use of X-rays include pain in the posterior aspect of both malleoli, navicular, base of 5th metatarsal pain and inability to walk 4 steps. Bruising is a poor sign for ankle and forefoot fractures as ligament strains around the foot can be dramatic. You must check for stability of the ankle ligaments as rupture may need immobilisation and orthopaedic review.

The ankle Ottawa rules are shown below. But it must be remembered that clinical discretion is paramount and decision to refer to hospital or not depends on clinical judgment. If patients require X-ray, they should go to RSCH and the doctor will phone 01273 696955 and ask to be put through to the Emergency Nurse Practitioner on duty to inform them of the referral.
If a sprain is diagnosed this should be treated with rest, ice, elevation and analgesia. There is no medical benefit for compression bandage (tubigrip). Patients should be asked to return to A&E in 24 hours if the pain does not settle.

Constitutional/medical
Prolonged exertional stress on the heart, lungs and other major organs of the body will undoubtedly result in patients presenting with a variety of ailments. These are looked at on the following pages.

Asthma
Runners may present to a first aid station because they have an acute asthma attack or because they have forgotten their inhaler. All first aid posts will have nebuliser masks and oxygen on hand. We will aim to place 1 or 2 nebules of salbutamol in your individual packs (depending on assignment). Paramedic and physician response units will have further supplies, and the two main treatment centres will have everything required to deal with status asthmaticus. Patients should be treated according to the British Thoracic Society.

In essence, the key is early assessment of how sick they are. If you are concerned, get senior help and arrange transfer to RSCH whilst giving nebulisers, steroids and if necessary magnesium 2g over 20 minutes.

Attached is the Peak expiratory flow chart and a copy of the asthma prompt card.

Asthma prompt card

1. **Immediate Management:**
   - Oxygen – target sats 94-98%
   - Salbutamol 5mg + Ipratropium 0.5mg Nebs (oxygen driven)
   - Prednisolone 40-50mg PO or Hydrocortisone 100mg IV

2. Get senior help

3. Patients with SpO2 <92% or other features of severe or life threatening asthma require Immediate hospital transfer

4. Repeat nebs and consider continuous salbutamol nebuliser 5-10mg/hour

5. Consider IV Magnesium Sulphate 2g over 20 minutes in 100ml N/saline
Prescription pads will be available as well for patients requiring ongoing medication for example inhaler replacement or a short course of steroids.

**Chest Pain**

Any runner presenting with chest pain must be assessed fully for acute coronary syndrome, although chest wall, lung and oesophageal pathologies should be considered as alternative causes of the pain.

Treat in standard way as you would but be sure to transfer out early for any suspected ACS. Aspirin 300mg should be given on suspicion of ACS. ECG machines will be available in the two main tents. But it must be noted that the use of ECG can be confusing in the context of marathon running with reduced sensitivity and specificity.

**Diabetes/Glucose Issues**

Runners with diabetes may present to you for prophylactic blood sugar checks, problems unrelated to their diabetes, or hyper or hypoglycaemic emergencies, with the latter being more common and more severe.

Most runners who have reached the stage of being able to run a marathon while being diabetic will be highly motivated and very experienced at managing their sugar control. All diabetic runners are advised to carry their own glucometer and dextrose tablets with them. If however, they fail to take swift enough action to correct low sugar, especially in the later few miles of the run, you should be prepared to intervene.

All diabetics presenting with collapse or confusion should have a blood sugar taken immediately. First aid posts will be equipped with oral glucose tablets specifically for this purpose as well as IV glucose in the paramedic bags. Beyond the first few miles of the run (roughly 1/3rd of the marathon) intramuscular glucagon will likely be ineffective as liver glycogen stores become depleted and hence should not be administered.

Treatment for hypoglycaemia for any runner is by glucostop followed by 150ml of 10% glucose and then review and additional requirements if needed. There is limited place for glucagon in marathon runners with hypoglycaemia.

If a runner has failed to respond to the warning signs of hypoglycaemia at one point, they are likely to do the same again. It is essential that any runner who wishes to continue with the race after treatment for a hypoglycaemic episode
has the capacity to make this decision. If you advise the patient not to continue with the race but they wish to do so then you should ask the runner to sign the refusal section of the patient record form and document your attempts to dissuade them from running and who was witness to the conversation, for example the Treatment Centre Manager. Any runner requiring intravenous glucose should be advised against continuing the race. Where the patient does not have capacity to make an informed decision the Medical Director / Medical Lead should be contacted for advice. Runners with type 2 diabetes on oral hypoglycaemics who present with low blood sugar are more unpredictable and should also be advised against continuing with the race.

Gut Symptoms

Diversion of essential blood flow to the muscles over a period of time can cause abdominal cramps, vomiting and diarrhoea. These may need to be treated with oral or intravenous fluids. First line anti-emetic should be Ondansetron oral/iv if abdominal cramps are present.

Hypothermia

If the weather is cold or it is quite windy it is not uncommon for runners to drop their body temperature significantly. Typically this resolves with a warm environment, foil blankets and a warm drink. Any runner with confusion should have their core temperature (see below) and blood sugar checked.

In addition there will be bubble wrap to wrap patients in and to warm them up. If their temperature is not improving by these simple measures and/or they are confused, then transfer to hospital for internal warming mechanisms may be needed.

Exercise Associated Collapse (EAC)

It is not uncommon for runners who put extra effort into their running just before the finish line to collapse as soon as they stop running. This occurs due to a combination of both the loss in muscle pump action from the legs and a sudden, paradoxical drop in systemic vascular resistance known as the Barcroft Edholm Reflex. Patients present initially as profoundly shocked (pale, cool, tachycardic) and may appear peri-arrest. The vast majority will recover in a relatively short period of time simply by raising their legs and feet in the shock/Trendelenburg position. The patient should be closely monitored during this recovery period. However, some patients will present similarly but with a life-threatening illness, and these should be excluded before diagnosing EAC.

Minimum Examination for EAC

All collapsed patients should have their vital signs assessed on admission, continuously until conscious, and then at a minimum of 15 minute intervals thereafter and once more prior to discharge, which include:

- rectal temperature
- blood pressure
- pulse
- respirations
- saturations
- mental status and orientation
- i-STAT™ assessment of electrolyte and sugar status (only recheck if first reading abnormal or patient deteriorates)

Please note that the i-STAT™ machine we have available does the following blood tests:

1. Chloride
2. Creatinine
3. Glucose
4. Ionized Calcium
5. Potassium
6. Sodium
7. Urea Nitrogen
8. TCO2

There is a flowchart available on the stations to guide management of these critically unwell patients. We advise that the flowchart is followed but with clinical discretion. The flowchart is reproduced below.

It is up to the clinician’s discretion if the patient is admitted to hospital or discharged. All patients not being sent to hospital should be advised to go to their GP in following 48 hours and if there is any suggestion of potential impact on their kidney they should be given a urine pot so that when they present to the GP, they have a sample of urine with them.
Brighton Marathon Medical Team Protocol
Management of a collapsed runner

1. Perform initial assessment:
   - ABC
   - Volume status
   - Core temperature (rectal)
   - Neurological signs
   - Salt levels (iStat)

2. Perform diagnostic pathology
   - Electrolytes
   - Blood gas analysis
   - Full blood count
   - Urine analysis

3. Assess for overload:
   - Oedema (light rings & weight gain)
   - Increased BP

4. Volume status
   - Low or normal
   - Consider diuresis with frusemide

5. Salt level
   - Mid Na 130-135
   - Severe Na < 121

6. Consider other diagnoses and transfer to hospital
   - Hypocalcaemia
   - Hypoglycaemia
   - Cardiac arrhythmia / infarction
   - Seizures
   - Cerebral event
Exertional Hyperthermia

Any runner who generates more heat through exercise than their body can get rid of will necessarily have a rise in core body temperature. This is more likely to occur during warm, humid weather but has occurred in marathons taking place in temperatures as low as 13°C. Small rises are tolerated well (up to 38 or 39°C), and are expected. A core temperature greater than 40°C, more than 10 min after running is defined as exertional hyperthermia and must be treated. If neurological signs are also present, it is defined as exertional heatstroke and must be cooled aggressively. The peak temperature and total time above 40°C correlates quite closely with morbidity and mortality figures. Exertional heatstroke is a life-threatening medical emergency. Runners may be drowsy or unconscious, and need airway support. The most effective treatment is rapid cooling, with the aim to cool to 38°C within a few minutes. With appropriate therapy the vast majority of runners will suffer no long term sequelae, although cognitive problems may be long-term, and patients must be referred to hospital urgently unless they are fully recovered.

Numerous studies have shown that the only reliable way to determine core temperature in exertional hyperthermia is via the rectal route. Patients are often peripherally vasoconstricted, and a peripheral temperature is often falsely reassuring. Patient privacy and dignity shall be maintained and where possible a chaperone should be present when assessing temperature in the opposite gender of the care provider. Every station and doctor will be issued with a digital thermometer and disposable probe covers. The finish line medical area will be equipped with invasive continuous temperature probes, which will be used for any patient with a documented temperature above 40°C and neurological signs.

For temperatures under 40°C and in patients who are sufficiently alert, treatment should commence with passive cooling measures and close observation. There is no place for paracetamol in the treatment of exertional hyperthermia.

For temperatures over 40°C you should notify the senior doctor on station immediately.

There are a variety of means of cooling patients, and you should use your clinical judgement as to which one is most appropriate in a given situation.

1. Evaporative cooling: spraying water and fanning the patient is effective, and should be used first.
2. Cold water immersion: the main medical tents will have a supply of ice water and towels which will be used to cover the patient. They should be changed frequently. For a temperate climate this should be as effective as immersion in a water bath and more practical.
3. External cooling jackets such as Carevest. (http://caervest.com)
4. Cold IV fluids: depending on clinical assessment of volume status and serum sodium, 1 to 2 litres of cold IV saline may be appropriate.
5. Invasive cooling: haemodialysis and cardiopulmonary bypass have both been used, but are very rarely required (obviously this is in hospital!).

Further information on heat stroke.


Exertional Heat Stroke

The Faculty of Sport and Exercise Medicine UK has produced a guide for the immediate recognition and treatment of Exertional Heatstroke (EHS) in those participating in exercise and sport. EHS is a severe heat illness, defined as central neurological dysfunction associated with an elevated core temperature, above 40°C, during or after exercise.

It is caused by an inability to lose heat appropriately and is more common in warm and humid conditions where evaporation of sweat is ineffective. It also occurs in cooler environments when endogenous muscular heat production may be high. Unrecognised or untreated, EHS can cause significant morbidity and may be fatal. Even when treated, there is a significant risk of short and long-term complications. Immediate recognition and treatment is therefore vital.

- The diagnosis of EHS should be considered in any collapsed runner or athlete especially if there are signs of central nervous system (CNS)
dysfunction. A clear reliable diagnosis of EHS can be made if these CNS signs are accompanied by a reliable measurement of a core temperature indicating hyperthermia (greater than 40°C). Rectal temperature measurement is therefore mandatory in any collapsed or confused runner. A rectal temperature is the most accurate core temperature; peripheral methods of temperature measurement, including aural thermometers, may give erroneous readings and cannot be relied upon.

- Medical staff should be aware that EHS may present with paradoxical signs of shivering and peripheral shutdown and that EHS can occur even in cool conditions.

- Heat stroke is a medical emergency and rapid onsite cooling intervention is required. Ice water immersion is the most effective method of cooling a hyperthermic patient but can be difficult to achieve when trying to protect the airway or gain intravenous access. Stripping the athlete, soaking with water and continuous fanning are also effective. Wrapping the athlete in wet towels combined with fanning is an alternative. Simple cooling by placing ice bags close to the major arteries (axillae, groin and neck) is significantly less effective than immersion.

- The aim of treatment is to reduce further metabolic heat production as quickly as possible and prevent organ damage. Targets for treatment should be a resolution of confusion and a core temperature below 39°C. There is a risk of hypothermia during cooling treatment which may cause further metabolic heat production through the onset of shivering therefore regular core temperature monitoring (for example, with an indwelling thermistor) is important.

- Patients with prolonged symptoms, despite onsite cooling, should be transferred to hospital.

- Field and hospital medical teams should be aware of the complications of EHS, many of which may not be evident in the field hospital setting and may present later, commonly in the first 24 to 48 hours, even if patients appear to recover rapidly at the initial presentation. Initial blood biochemistry within several hours of collapse is often normal and may require repeating. The complications can include rhabdomyolysis and neuro-cognitive dysfunction, as well as renal, liver and multiple-organ failure. Neuro-cognitive dysfunction includes disorientation and confusion, which may be chronic. Even if asymptomatic, EHS patients should be followed up to ensure resolution of biochemical derangement.

- Patients should be educated that after one episode of EHS, there is a risk of further episodes. Heat tolerance testing may be useful, where facilities exist.

- Those suffering from EHS are advised to avoid all exercise until they are asymptomatic and laboratory investigations have returned to normal. Return to exercise should be gradual, and under the guidance of their sports and exercise physician or GP.

- Medical teams should be aware of the rare association with Malignant Hyperthermia (MH) muscle types. If sedation or anaesthesia is required, drugs which are known to trigger MH (for example, suxamethonium), should be avoided.

- It is vital to ensure that athletes, sports participants and medical staff are fully educated about the potential risks of developing EHS during exercise, as well as the risk factors which may increase the likelihood of developing the condition.

**Hyponatramia (water intoxication)**

Although previously quite rare among elite athletes, increasing numbers of less well-trained athletes participating in endurance events has lead to an increase in exertional hyponatraemia. Sweating generally produces 400 to 1200 ml per hour in trained, acclimatised athletes. Previously, runners were recommended to drink 400 to 1200 ml/hr to compensate. However, this had led to a dilutional hyponatraemia in some runners. Current guidelines are to drink only to thirst, and this seems to have reduced the risk. Electrolyte containing sports drinks may offer false security towards this as they tend to contain only 5 to 10 mmol/L of sodium, whereas sweat sodium ranges from 20 to 100 mmol/L. Any runner presenting with confusion must have serum sodium measured, in addition to their rectal temperature. i-STAT™ point-of care machines (Abbott Laboratories) will be available to assess sodium levels, and other parameters, in both main tents. Clinical signs to look for in water intoxication include confusion, evidence of volume overload (raised JVP, oedema), and seizures.

In cases of documented hyponatraemia (Na < 135) without other signs, do not give IV fluids, restrict oral fluid intake and encourage salty food consumption. If they are severely volume overloaded, then frusemide 10 mg iv may be given, although this is not strongly evidence based.

For Na < 129 or if convulsions occur, consider administration of 100 to 200 ml boluses of 3N saline (2.7%). It is considered safe to correct Na to 125 over 1 to 2 hrs, or to fully normalise in 2 to 4 hours, although this is based on level IIC evidence at best. It is clear however, that since the hyponatraemia has likely occurred quite acutely, there is little concern regarding the development of central pontine myelinolysis.
There is a flowchart available on the stations to guide management of these critically unwell patients. We advise that the flowchart is followed closely.

Anaphylaxis

If any patients suffer an allergic reaction, follow the Resus Council guidelines. The available drugs will be in the main treatment centres and mobile medical units.

The resus council guidelines are attached.
Choking
If any patients suffer from a choking episode, follow the Resus Council guidelines. These are attached. Call for senior assistance asap if it does not resolve immediately.

Arrhythmias
If any patients have serious arrhythmias then transfer should be arranged to go to hospital ASAP. Call for help from mobile medical units or main treatment centres.

Attached is the bradycardia Resus Council guidelines and the prompt card showing how to pace. We will be having a defib capable of pacing in the main treatment centres – but aim for early transfer to hospital.
Adult Bradycardia Algorithm

- Alternatives include:
  - Aminophylline
  - Dopamine
  - Glucagon (if bradycardia is caused by beta-blocker or calcium channel blocker)
  - Glycopyrrolate (may be used instead of atropine)

Assess using the ABCDE approach
- Monitor SpO2 and give oxygen if hypoxic
- Monitor ECG and BP, and record 12-lead ECG
- Obtain IV access
- Identify and treat reversible causes (e.g. electrolyte abnormalities)

Adverse features?
- Shock
- Syncope
- Myocardial ischaemia
- Heart failure

Satisfactory response?
- Atropine 500 mcg IV

Consider interim measures:
- Atropine 500 mcg IV repeat to maximum of 3 mg
- Transcutaneous pacing
- Isoprenaline 5 mcg min⁻¹ IV
- Adrenaline 2-10 mcg min⁻¹ IV
- Alternative drugs*

Risk of asystole?
- Recent asystole
- Mobitz II AV block
- Complete heart block with broad QRS
- Ventricular pause > 3 s

Seek expert help
- Arrange transvenous pacing

1. Call for SENIOR DOCTOR
2. ATTACH MONITORING – ensure IV access and O₂ in-situ
3. ATTACH Defib Pads AND 3 Lead
4. PACE:
   a. Press PACER
   b. Press RATE – select desired pacing rate
   c. Press CURRENT – increase current until electronic capture occurs
   d. Palpate central pulse to ensure mechanical capture
5. To view intrinsic rhythm press and hold pause (release to resume pacing)
6. Consider SEDATION or ANALGESIA – if patient uncomfortable
7. Transfer to hospital by Blue light

Remember that the majority of tachycardia’s will be sinus and the cause of the tachycardias needs to be treated. However, non sinus tachycardias will need to be transferred to hospital unless they are life threatening in which case, they will need senior support and a decision about DC cardioversion in the medical tent prior or transfer to hospital. If you need to DC cardiovert in extremis follow the protocol attached.
The life threatening features requiring DC cardioversion include:
- Severe shock
- Collapse and LOC (syncope)
- Heart failure
- Myocardial ischemia

Conversion of non–life threatening SVTs can be attempted by vagal manoeuvres – get the patient to blow into a syringe as hard as possible. We do not stock adenosine. Please note the ability to do 12 lead ECG will be available at each main treatment centre.

**Left Ventricular Failure**

Standard treatment should be commenced including frusemide and GTN spray if the systolic BP is greater than 100mmHg. It should be noted that we will not have GTN infusion. We will be stocking a portable CPAP machine in each of the two advanced treatment centres.

**Cardiac Arrest**

Cardiac arrest can occur in a runner (about 1 in 80-100,000 marathon runners), or in a member of the crowd, or member of the public within the marathon footprint.

The key to survival is good compressions, early defibrillation, reduction of time from last compression to shocking and good post resuscitation care. As soon as cardiac arrest has been confirmed, inform control who send an ambulance/advanced cardiac arrest team and call for SECAMB back up if required.
BLS and use of AED may be in progress by SJA or you may be first on scene. The BLS/AED protocol from the Resus Council is attached.

When you arrive, a team leader should be appointed and advanced life support algorithm should be followed and a manual defibrillator used instead (reduces time from last compression to shocking). The advanced life support (ALS) algorithm is attached.

**Adult Basic Life Support**

1. **Unresponsive and not breathing normally**
   - Call 999 and ask for an ambulance
   - 30 Chest compressions
   - 2 Rescue breaths
   - Continue CPR 30:2
   - As soon as AED arrives switch it on and follow instructions

**Resuscitation Council (UK) 2015**

**Adult Advanced Life Support**

1. **Unresponsive and not breathing normally**
   - Call resuscitation team

2. **CPR 30:2**
   - Attach defibrillator/monitor
   - Minimise interruptions
   - Assess rhythm

3. **Shockable (VF/Pulseless VT)**
   - 1 Shock
   - Minimise interruptions
   - Immediately resume CPR for 2 min
   - Minimise interruptions
   - Assess rhythm

4. **Return of spontaneous circulation**
   - Immediate post cardiac arrest treatment
     - Use ABCDE approach
     - Aim for SpO2 of 94-98%
     - Aim for normal PaCO2
     - 12-lead ECG
     - Treat precipitating cause
     - Targeted temperature management
      - Use ABCDE approach
      - Minimise interruptions

5. **Non-shockable (PEA/Asystole)**
   - Immediately resume CPR for 2 min
   - Minimise interruptions
   - During CPR
     - Ensure high quality chest compressions
     - Minimise interruptions to compressions
     - Give oxygen
     - Use waveform capnography
     - Continuous compressions when advanced airway in place
     - Vascular access (intravenous or intraosseous)
     - Give adrenaline every 3-5 min
     - Give amiodarone after 3 shocks

   - Treat Reversible Causes
     - Hypoxia
     - Hypovolaemia
     - Hypo-hyperkalaemia/metabolic
     - Hypothermia
     - Thrombosis - coronary or pulmonary
     - Tension pneumothorax
     - Tamponade – cardiac
     - Toxins

   - Consider
     - Ultrasound imaging
     - Mechanical chest compressions to facilitate transfer/treatment
     - Coronary angiography and percutaneous coronary intervention
     - Extracorporeal CPR
In Sussex, SECAMB use protocol C. This deviates slightly from national ALS guidelines for people who have had a delay from arrest to personnel arriving. If SECAMB trained crew are present and familiar with this protocol then they may use it. It is shown below.

After the first two cycles, the protocol is the same as conventional advanced life support.

In the very rare event of a traumatic cardiac arrest (i.e. from trauma or a stabbing) please follow the traumatic cardiac arrest protocol. See below.
It is worth remembering that paramedics are more experienced at dealing with out-of-hospital cardiac arrests than the majority of Doctors and their expertise will be invaluable.

In all occasions of a cardiac arrest, the advanced cardiac arrest team will be called. They will perform ALS for 20 minutes including the use of a LUCAS and then the out of hospital ECMO team will consider the use of ECMO.

If there is a decision to not start ECMO, then the LUCAS should be continued and the patient transported to hospital for consideration of any other reversible causes, unless there is good clinical reason not to do so. But transportation on LUCAS is the default decision in the patients in whom ECMO is not appropriate.

If ECMO is to be started, the ECMO team will co-lead the arrest with the team leader of the advanced cardiac arrest team. For the full ECMO protocol, please see attached document.

If the patient gets a Return of Spontaneous Circulation (ROSC) prior to ECMO being started, then prompt post resuscitation care is needed including the use of therapeutic hypothermia to 33-36°C. If the temperature is above 36°C and if the patient is obtunded and needs intubation, the decision to intubate someone post-ROSC will be made by the senior clinician on scene.

There is nothing that the Marathon major treatment centers can offer in addition to the advanced cardiac arrest team/advanced medical ambulance and patients must be transported direct to the RSCH ED.

Once a cardiac arrest is confirmed, control will liaise directly with the duty cardiologist at the RSCH and Emergency Medicine consultant and inform them of the occurrence in order to expedite an angiogram if appropriate. Control will also put a ‘Red Alert’ call through to the Emergency Department.

In the event of a runner collapsing and having a cardiac arrest – if the clinician feels that this could be due to heat stroke and an increase in potassium, if DC cardio-version has not worked, consider 10mg of Calcium Chloride.

SJA will arrange for sheets to be held up to provide dignity to the medical team and casualty.

Please use the attached documentation for cardiac arrests documentation. See attached chart.
Protocol for the Provision of Extra-Corporeal Membrane Oxygenation (ECMO) at the Roadside, as part of the Brighton Marathon Medical Team’s Advanced Cardiac Arrest Team

PERSONNEL:
- St John Ambulance (SJA) first responder(s) = first aider / steward
- Forward Incident Team (FIT) = SJA first aiders
- Medical response team on Mobile Medical Unit (MMU) = paramedic(s) + doctor

ADVANCED CARDIAC ARREST TEAM (ACAT) MEMBERS:
- ACAT (in Veto) =
  + Pre-hospital team (+/- HEMS): doctor (e.g. Dr Magnus Nelson) + paramedic(s) + ECMO team
- Royal Brompton Hospital (RBH) Consultants: Dr Ben Singer, Dr Simon Finney, Mr Richard Tremlett
- Lead Perfusionist: Mr Tim Jackson

CHAIN OF EVENTS:
1) Patient collapses

2) Assessed by first responder
a. first responder = SJA first aider / steward / bystander

3) First responder to radio control and BOTH to NOTE TIME OF COLLAPSE + TIME CPR STARTED
a. first responder to contact control at Grounded Events Company (GEC) to report a collapsed patient who is unresponsive and not breathing
b. call may come from 999 (bystander)
c. exact location to be clarified (landmarks, mile markers etc): start planning ACCESS and EGRESS

4) First responder to start Basic Life Support (BLS) + stewards to provide privacy from crowds
a. first responder may require BLS guidance from control (protocol to be available)
b. stewards / volunteers / first aiders to hold up sheets / tarpaulins / blankets (available on MMU and ACAT vehicle)

5) Control to dispatch MMU and advise best ACCESS route
a. medical team of paramedic + doctor arrive on scene, re-assess casualty and take handover
b. medical team to confirm cardiac arrest
i. medical team to radio control with update of confirmed cardiac arrest and exact location
ii. medical team to continue with Advanced Life Support (ALS), including defibrillation and intubation as needed

6) Control to dispatch ACAT (and advise best ACCESS route) and inform Mel Ottoweil

7) Control to dispatch ACAT
a. ACAT to arrive with ECMO team, equipment and LUCAS
b. ACAT to re-assess patient, confirm cardiac arrest and endotracheal tube placement, and receive handover
c. primacy / team lead given to ACAT HEMS doctor
i. continue ALS
ii. clarify patient history in preparation for ECMO team
iii. ensure good 360° access
d. ECMO team to prepare patient and equipment
i. insert guidewires
e. SJA first aider to remove scoop and trolley from ambulance: bring to patient

8) Control to liaise with Brighton Royal Sussex County Hospital (RSCH)
   a. patient to be received in the RSCH Emergency Department (ED)
      i. pre-alert / ASHICE call to ED consultant and nurse in charge
      ~ ED team to pre-alert senior anaesthetist on-call
      ii. pre-alert call to CCU for primary PCI (percutaneous coronary intervention) and estimated time of arrival given
      iii. pre-alert call to transfusion lab in the event of massive haemorrhage

9) At 20 minutes: decision made regarding proceeding on ECMO
a. time-out at 20 minutes: team lead to discuss patient history with ECMO team
   i. if patient meets criteria and team in agreement, proceed with ECMO
   b. team lead to update control with decision

10) Team to prepare for transfer and clarify EGRESS route to RSCH
a. package patient
b. confirm EGRESS
11) Team to move patient onto MMU and transfer to RSCH
   a. 3 x ACAT personnel to travel in rear of MMU with patient
   b. remainder of team to travel ahead to RSCH on blue-lights, to meet the
      patient on arrival to ED

12) Patient received in ED
   a. assigned hospital number
   b. arterial blood gas run (taken by perfusionist; post-oxygenation)
   c. review by cardiology consultant
   d. on-call anaesthetist to join team

13) Patient transferred to Hybrid Lab once on-call primary PCI team
    available
   a. primacy of care handed over to RSCH team
   b. ECMO team + on-call anaesthetist to stay with patient
   c. HEMS / pre-hospital team to stand down and return to Marathon
   d. in-lab CT head scan performed if needed (as confirmed with Lead
      Radiographer Michael Clarke)

14) Control to expedite SECAMB blue-light transfer to Royal Brompton
    Hospital (RBH)
   a. liaise with ECMO team to confirm pick-up location (e.g. ED resus) and time
      of departure
   b. ECMO team to confirm with control when en-route to RBH
   c. ECMO team to liaise with RBH and provide estimated time of arrival

OTHER CONSIDERATIONS:

- Return of spontaneous circulation (ROSC) before 20 minutes:
  + transfer to RSCH as standard
  – control to pre-alert ED of arrival
  + ACAT to remain with patient

- Mel Ottoweil to liaise with family and press-office (RSCH, Marathon,
  Royal Brompton)

- First aiders to maintain patient privacy as much as possible, by holding up
  sheets / blankets / tarpaulins
  + available in MMU and ACAT vehicle

Patients refusing treatment/Ignoring advice on stopping

As long as a patient has capacity they can refuse treatment, even if we disagree
with their decision. Always get senior advice. If they lack capacity (i.e. due
to confusion from exercise associated collapse/heatstroke/hypernatremia)
but need treatment (and risks of not treating are greater than risks of treating
against their will), get senior advice, inform control and the medical director
and then treat them in their best interests (under the Mental Capacity Act).

But some runners may not take your advice about stopping racing. You need
to make a judgment call about if that is safe to do so. For example, if it is a
musculoskeletal problem and they are informed of the risks, then they may
continue.

But if they have got worsening medical problems such as crescendo angina,
worsening asthma etc, then we may not allow them to continue running, as it
could threaten the safe running of the whole event e.g. if they collapses later on.

If you are to get into that situation, get senior advice and contact the medical
director. He will decide, along with discussion with doctors at the scene if the
runner should be prevented from continuing and if necessary liaise with the
stewards and race director to ensure this is so.

Hopefully neither of the two scenarios will occur, but we need to plan for these
eventualities.

Additional guidance for critically ill patients who may need intubation and
blood pressure support

Airway Support

All patients with a decreased GCS should be assessed by a doctor with critical
care experience/Emergency Medicine experience/A anaesthetic experience.
This may be somewhere in the range of 10 to 25 patients arriving at the finish
line. Most will respond promptly to simple manoeuvres, but a handful may not.

If airway support is required, all patients will be assumed to have full stomachs,
especially given the volumes of water imbibed and the known decrease in
gastric motility associated with exercise. A range of endotracheal tubes will be
available in both major medical tents and the mobile medical units. Simple
adjuncts should be available in every first aid post and ambulance.
Rapid Sequence Induction of Anaesthesia

It is very rare that we will need to do an RSI in a patient unless it is post arrest. We must remember that hospital is safer than in the field but then balance that with the complications of delaying intubation.

If a decision is made to intubate it must be made by the most senior member of the team present. Pre-oxygenation should be attempted and a checklist used. Clinician discretion can proceed straight to intubation though if this is felt the safest thing to do. You must take into consideration that intubation is harder in a pre hospital environment than a hospital environment and also the full hospital difficult airway equipment is not available.

The intubation checklist is attached.
We will have colour change CO₂ detectors and EMMAS as well as CO₂ monitor on our monitors. These must be used for all intubations. If you get into a can’t intubate, can’t ventilate, then you should use DAS guidelines for this situation. This is attached.
Propofol, Suxamethonium, Rocuronium and thiopentone are available for RSI.

PLEASE NOTE THE RISKS ATTACHED IN USING SUXAMETHONIUM IN ANYONE AT RISK OF HIGH POTASSIUM OR HEAT STROKE.

Sedation

It will be incredibly rare to need to do a sedation – and only possibilities are for DC cardioversion or pacing. Joints must not be relocated using sedation pre-hospital unless limb threatening. You must be aware that pre hospital – not all medications and equipment are available and your decision to sedate must be made with that in mind. But if you do need to sedate you are required to follow sedation prompt card. See below.
Choice of induction agent and maintenance

This is left to operator discretion. We will aim to have a range of choices and these will be shown in the drug list. Midazolam or propofol are available for maintenance. Please review the drug list prior to the day so that you will know what drugs are available.

Neuromuscular blockade

There is crossover between malignant hyperthermia and exertional heatstroke, and therefore suxamethonium is not recommended for hyperthermic patients. Rocuronium is a better choice. Suxamethonium (50 mg/ml) will be available for normothermic patients where the clinician feels it is appropriate.

Paradoxically, hyperthermic patients may have cool skin and be rigoring. Theoretically, use of neuromuscular blocking agents in an anaesthetised patient will reduce heat production in skeletal muscle and aid in cooling.

Ventilation

Minute ventilation requirements in the recently collapsed runner will be high, and may exceed the capacity of any portable ventilator in an ambulance. Patients will need to be hand ventilated. ETCO2 monitoring is mandatory. There is a balance between preserving cerebral blood flow by maintaining a normal PaCO2, compensating for a metabolic acidosis, and avoiding of volutrauma or barotrauma.

Fluids

- 2.7% NaCl will be the mainstay fluids for hyponatraemia
- 0.9% NaCl will be used for hypovolaemia without hyponatraemia
- No Hartmanns solution or colloids will be routinely available
- No 5% glucose solutions will be available anywhere
- 10% to 50% glucose will be available to support documented hypoglycaemia
- Oral fluids should always be the first consideration where appropriate
Pressors/Inotropes

In the event of cardiovascular collapse, alpha-pressors (metaraminol & phenylephrine) will be available. Ephedrine may be less effective owing to sustained, ongoing sympathetic activity.

Atropine will also be available. Dilute (10 mcg/ml) adrenaline may be appropriate (1 ml from 1:10,000 mini-jet diluted to a further 9 ml with saline).

IV Access

It is unlikely that large volumes of fluid will be needed at any particular time, hence 18 or 20 gauge venflons will likely be adequate. For difficult access in a vasoconstricted patient, there will be 14 or 16 gauge long Abbocaths and/or intraosseous access available in the main treatment zones. Formal central venous access will not be placed in the field nor will any invasive monitoring.

Arrival of a sick Patient

Patients may be ‘ASHICEd’ through to the treatment centres depending on the decision of the team seeing them in the street and also that of the medical director. The information will be relayed to the major treatment centre team leader and will contain the following information:

- Age of the patient
- Sex of the patient
- History of the incident
- Injuries/Illness
- Condition – including current observations
- Expected time of arrival

On notification the senior doctor in the tent will arrange a team as appropriate. A suggested pre patient arrival checklists is shown below.

Transfer of a sick Patient

Prior to patients being transferred, a transfer checklist should be performed unless thought not clinically needed or appropriate by the clinician in charge. This is shown below. This should form part of the patient notes. Prior to transfer control should be informed and they will inform the hospital.

If SECAMB are transferring, the doctor accompanying the patient maintains clinical responsibility. Otherwise it is transferred to the paramedic team.
Emergency Department Transfer Out of Treatment Centre - Response Checklist and SOP

IN EXTREMIS THERE MAY NOT BE TIME TO USE CHECKLIST. DOCUMENT WHY.

1. Ensure patient is stable enough to proceed with checklist
2. Brief team on plan and plans for any difficulty
3. Inform RSCH A&E consultant of transfer. 01273 696955 ex 4218
4. If intubated check ET is secure/
   If unintubated check airway patent
5. Is working suction available
6. Check and take with you:
   BVM
   LMA/guedel/NPA
   2x laryngoscope and ET tubes
   Bougie
7. Do you have adequate oxygen for the transfer (estimate amount required and double it)
8. Ensure defibrillator is available or close to hand
9. Put on full monitoring (ECG, Sats, NIBP cycling every 2 minutes)
   Check battery of monitor.
10. For intubated and sedated patients ensure CO2 monitoring
11. Ensure iv access is securely tapped down
12. Ensure fluids are available
13. Take drugs as necessary
   Induction agent
   Short acting NMJ
   Long acting NMJ
   Maintenance agent
   Ephedrine/metaraminol/atropine
   Resus drugs – adrenaline
**Communication Between Health Care Professionals**

There is a large evidenced base which suggests that communication problems lead to medical errors when looking after the sickest of patients. As such at the Brighton marathon we will use standardised communication systems between HCPs when dealing with sick patients.

a. Closed loop communication. I.e. if a request had been made, then it is repeated back to confirm that it has been heard and understood.

b. SBAR for when asking for help and guidance. (Situation, Background, Assessment and Recommendation).

**Observations**

We will be using the National Early Warning Score (NEWS) observation charts. This is shown in the first aider advice.

**Runner’s Number Information**

All runners will have a number sign attached to their shirt, as is normal in any marathon. Runners with significant medical history are encouraged to record relevant information on the back of the sign (i.e. diabetes, asthma, etc). The sign can also be a useful place to record information on the day. If you administer any medication or provide treatment that colleagues / doctors later on the course would need to know about, please make a brief notation on the backside of the card before the runner departs.

**Patient Record Forms**

This St John Ambulance form is used when a formal consultation has taken place. It is A3 sized and multi-part. Most of the details will be completed by the first aid staff, but if you review the patient you should record a comment in the free text area and sign the form, including your GMC number. The patient takes a copy and we keep a copy for audit and clinical governance purposes. The form is shown below.

For the patients who have seen Health Care Professionals we would also like a specific Brighton Marathon Medical Record filled in. The reason for this is so that we can collaborate on worldwide audits of collapsed runners and this is the standard information required. Please do not repeat the work; on the SJA PRF – you can just write see accompanying Brighton Marathon Medical Record Team pro-forma.
Continuation Sheets

If you require more room to write your notes then these forms will be available to you from SJA. This is where you can also document any referral letter. This is essential if patient is being transferred to hospital. If they are being transferred then they also need any observation charts attached.

Prescription Pads

A Brighton marathon prescription pad is available to all doctors. These are private prescriptions and the patient will have to pay for the medication themselves. Generally however, the costs of the items you are most likely to prescribe are less than the NHS prescription fee (e.g. a salbutamol inhaler is about £2.20, and a chemist typically charges 1.5 times the base price).

On the back of the prescription is a list of pharmacies in the town open on a Sunday.
Disposition and Discharge: First Aid Post Doctors

If you are not happy about discharging a patient, you have the following options available:

- Phone control and get advice from the medical director.
- Transfer by ambulance to the main treatment tents.
- Transfer by ambulance to the ED at the Royal Sussex County Hospital.
- Before sending the patient onward, please ensure the appropriate documentation is complete.

Disposition and Discharge: Advanced Treatment Centre Doctors

Do expect to receive patient directly from the route as well as your peers. Please be mindful that many of the doctors at the smaller posts have very little diagnostic equipment available to them, so they may have a low threshold to refer to you. Likewise, while we are equipping you with multi-parameter monitors, 12 lead ECGs, we are still not operating a full A&E department. Our goal is to triage out those who we can treat, but not to delay sending patients to hospital who need to be there. Once again, common sense and good clinical judgement should enable appropriate decisions to be made.

Discharge

When deciding whether or not your patient is ready for discharge, remember they should have the following:

- capacity to make decisions, and be fully orientated
- be able to safely get themselves home
- be mobile without assistance (musculoskeletal problems excluded)
- be taking fluids orally

As well as SJA documentation to discharge patients with, there is a separate discharge leaflet for anyone with an exercise associated collapse.

This is shown below.
Leaflet for all patients treated by HCPs – Discharge information for those with exercise associated collapse and exhaustion, including instructions about fluid and food.

Since you have visited the medical tent, it is especially important for you to be extra careful during these next few hours & days after the marathon. Here are a few tips to help you through your recovery period. If any of your symptoms get worse or do not go away completely then you should see a Doctor & tell them you have run the marathon. Go to your GP, call 111, the walk in centre at Brighton station or if very unwell got to A&E or call 999

Simple ways to measure your need for fluids is to check your weight & keep track of how much you are urinating. It is common to lose a few pounds of water weight during the marathon.

If you have lost 2-5% (example 2% of 150lbs = 3lbs) then you have lost fluid & may be dehydrated.

• If you are urinating & have no symptoms then you should continue to take sips of sports drink or every 15-20 minutes. You should combine drink fluids with salt & sugar in along with water instead of only plain water (eg chicken broth, sports drinks, milk shakes). Once your urine is clear & you are urinating freely, then stop taking sips & drink only when thirsty.

• If you have symptoms such as feeling light-headed, dizzy, nauseous, vomiting, confused, short of breath, develop muscle aches or cramps which will not go away, and you have not been able to urinate, then you should call 999 or have someone take you to the nearest A&E and tell them that you have run the marathon.

If you do not know your weight, then keep track of your urine:

• Urine that looks like lemonade means that you do not need to drink any extra fluids, & so drink only if you are thirsty.

• Urine that looks like apple juice is concentrated & may mean you are dehydrated

• Urine which looks dark (dark orange or cola coloured) & you develop muscle aches or cramps which will not go away, then you may have developed rhabdomyolysis (muscle breakdown). This can be dangerous & you should call 999 or have someone take you to the nearest A&E and tell them that you have run the marathon.

Much less commonly, if you have gained weight, then you may have drunk too much during the marathon. You are at risk of hyponatraemia (low salt levels).

• If you have no symptoms, then restrict your fluids & eat salty foods such as pretzels & pickles.

• If you have symptoms such as feeling dizzy, nauseous, vomiting, have a headache, confused, then you should call 999 or have someone take you to the nearest A&E and tell them that you have run the marathon.

If you do not feel well after the marathon, you should avoid alcohol

If you collapsed and we felt the need to do a blood test whilst you were in the medical tent, it is not unusual for one of the results to be raised after a marathon without causing you any harm (eg Creatinine).

However we suggest that this blood test is repeated after 48hrs (Creatinine & electrolytes) & your urine is checked (simple dipstick for glucose, blood & protein) at your GP surgery, to check that all has returned to normal

Finally you may need to avoid some medications for several days after the marathon since they can harm your kidneys:

• Do not take anti-inflammatory drugs such as ibuprofen (nurofen). Paracetamol is safe.

• Some ‘blood pressure’ medications if your BP is low. Your GP will decide this but avoid them till you see your GP the next day.
Confidentiality

It is essential that all contacts with the medical team are dealt with within the normal realms of medical confidentiality that apply to us all in our day to day work. There should be no communication with press or members of the public. Any enquiries should be referred to the Medical Director.

Treating Members of the Crowd and people within the Marathon Footprint

The Marathon medical team is responsible for treating members of the public within the Marathon ‘footprint’. Standard NHS protocols should be used for these patients taking into consideration the fact that you are working in a pre-hospital environment.

Medical Education for the Marathon Medical Team

We ask you to please read this volunteer handbook and if interested further information is available to the volunteers in the medical plan.

A free medical conference is on Saturday 16th April at 4pm, which we would ask you to please attend to also get information on logistics. The poster for this conference with information on talks is attached. A CPD certificate will be provided to all attendees. In attendance will be our Sponsors Philips who will be demonstrating their monitors and defibrillators.

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The Brighton Marathon 2016
Medical Conference & Medical Plan Briefing

Saturday 16th April 2016, 16:00-19:45pm
Clarence Room, Hilton Metropole Hotel, Brighton

Conference Theme: “The Cardiac Impact of Running”

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>15.15 – 16.00</td>
<td>Register, Get kit and refreshments</td>
</tr>
<tr>
<td>16.00 – 16.10</td>
<td>The Brighton Marathon Story and Thank You</td>
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<td></td>
<td>Rob Galloway, Medical Director</td>
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<td></td>
<td>Tom Naylor, Event Director</td>
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<tr>
<td>16.10 – 16.15</td>
<td>Thank you on behalf of BSUH NHS Trust</td>
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<td></td>
<td>Amanda Federo, Interim Chief Executive BSUH NHS trust</td>
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<tr>
<td>16.15 – 16.45</td>
<td>Medical Issues Likely to be Encountered</td>
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<td>Rob Galloway, Medical Director and A&amp;E Consultant, BSUH NHS Trust</td>
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<tr>
<td>16.45 – 17.00</td>
<td>Podiatry and MSK Conditions Likely to be Encountered</td>
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<tr>
<td></td>
<td>Dawn Buoy, Physiotherapy Lead for Brighton Marathon</td>
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<td></td>
<td>Tom Austen, Podiatry Lead for Brighton Marathon</td>
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<tr>
<td>17.00 – 17.30</td>
<td>Is running bad for the heart?</td>
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<td></td>
<td>Dr Polly Baker, Consultant in Sports and Exercise Medicine, Department of Sports Medicine and Rehabilitation, Defence Medical Rehabilitation Centre, Headley Court, Surrey</td>
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<tr>
<td>17.30 – 18.15</td>
<td>A word from our sponsors Philips</td>
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<td>Break with coffee, drinks and nibbles</td>
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<tr>
<td>18.15 – 18.45</td>
<td>A History of Cardiac Resuscitation</td>
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<td></td>
<td>Professor Douglas Chamberlain, International Expert in Cardiac resuscitation</td>
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<tr>
<td>18.45 – 19.15</td>
<td>Optimal Cardiac Arrest: The Advanced Cardiac Arrest team and Use of ECMO</td>
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<td></td>
<td>Magnus Nelson A&amp;E Consultant, BSUH NHS Trust and HEMS Consultant, Kent, Surrey and Sussex Air Ambulance Service</td>
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<td></td>
<td>Ben Singer ITU Consultant, Royal Brompton NHS Trust and HEMS Consultant, Kent, Surrey and Sussex Air Ambulance Service</td>
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<tr>
<td>19.15 – 19.45</td>
<td>Operational Arrangements</td>
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<tr>
<td></td>
<td>David Bowen, Deputy Head of Medical Services</td>
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<td></td>
<td>Rachael Grimaldi, Assistant Medical Director</td>
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<tr>
<td></td>
<td>Will Rowell, Lead Nurse</td>
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<tr>
<td></td>
<td>Darren Owen/Trevor Moss, SJA Lead for Brighton Marathon</td>
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<tr>
<td>19.45 Onwards</td>
<td>Collect kit, meet team, drinks</td>
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</tbody>
</table>

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