



## **International Police Mountain Bike Association (IPMBA)**

### **EMS Bike Team Model Policies and Procedures**

This model policy is comprised of two parts. The first is a statement of policy and procedure that can be used as a foundation for the development of policy governing the deployment of EMS bicycles within a specific agency.

The second is a concepts and issues paper, which provides a more in-depth discussion of the issues underlying the policies and procedures. This document must be customized to meet the specific needs of each individual agency.

#### **Model Policy**

##### **I. Purpose**

It is the purpose of this policy to provide guidance on the implementation, use and deployment of EMS bicycles and the general management of EMS bicycle operations.

The EMS bike team will be deployed in the following circumstances:

- Special event coverage.
- High emergency call demand.
- High levels of motorized traffic congestion.
- High non-transport rate of ambulance cases.
- Areas of pedestrian zones and difficult vehicular access.
- Search and rescue operations.

##### **II. Policy**

Bicycle riders are an important component of the service strategy for accomplishing the emergency response and clinical objectives due to their mobility, speed and patient care outcomes as well as their ability to facilitate a variety of public and promotional operations.

Because of their speed and mobility, they are an effective means to meet response time performance objectives. Because of their accessibility to the community, they are well-suited for providing bicycle safety education and other health education materials. In communities with mobile integrated health initiatives, the bike unit members may offer patients alternative care pathways if further clinical and local patient referral pathways knowledge is obtained, thus saving motorized vehicle response and providing a better patient outcome. Bicycles are environmentally friendly and can assist agencies in meeting fuel savings and emissions reduction goals. They are also a cost-effective and relatively low-maintenance means of transport that promote physical fitness.

##### **III. Procedure**

###### **A. Deployment**

1. EMS cyclists may be dispatched or may initiate response to all calls for service in which they are able to reach an emergency scene first or in a time comparable to that of a motorized vehicle, unless otherwise indicated by this policy. Contact must be regularly made with the dispatch center or

Emergency Operations Center (EOC) both from the cyclist and communications staff. Communication devices such as standard issue portable radios and mobile phones should be carried with full power and means to sustain full shift communications. Mobile data terminals and GPS units may also be carried.

2. Under normal circumstances, EMS cyclists should not be dispatched or initiate response to incidents in which their reduced emergency equipment capabilities (such as emergency warning devices, extraction equipment and personal protective equipment) may present service problems or dangers. These include but are not limited to the following:

- Civil disturbance, except as members of a Bicycle Response Team;
- High-risk of abuse or possible violence;
- Hazardous chemical and WMD incidents;
- Situations in which the lack of protection afforded by a motor vehicle may jeopardize the safety of the EMS cyclist.

If any of these circumstances are present but unknown to the EMS cyclist prior to arrival on scene, the EMS cyclist should call for back-up according to departmental policy.

Response to such situations may be permitted in circumstances where motorized units are not readily available, or as backup where ambulance vehicles are already on the scene.

3. EMS cyclists may be used for targeted geographic areas that fall into their Scope of Practice and to provide medical coverage at pre-planned events.

4. EMS cyclists will respond to any emergency that falls within the scope of their duties as defined by this policy. Situations in which the bikes may be deployed include:

- Difficult vehicle access emergencies
- Special events, including but not limited to: parades, festivals, fairs, concerts, sporting and other indoor and outdoor events
- Demonstrations (only if properly trained for tactical situations and/or as members of a Bicycle Response Team)
- Disaster situations in which movement by conventional motorized emergency response vehicles is limited or impossible, and only on instruction from the incident commander
- Urban incidents in which the volume of vehicle or pedestrian traffic may inhibit the response of ambulance motor vehicles
- Incidents where responding motor vehicles are delayed or unavailable, if riders are properly equipped, trained and if their proximity or response time to the incident may be advantageous
- Search and rescue operations (if properly trained in SAR techniques)

5. EMS cyclists may participate in community outreach activities, offering bicycle safety education and advice and disseminating public health information, as provided and authorized by the agency.

6. EMS cyclists should avoid fast traffic areas. Physical contact with a moving vehicle is not authorized; if the incident dictates escorting any moving vehicle or directing traffic, it should be done with the extreme caution.

7. Whenever possible, riders should protect the scene of the incident, using methods learned in training, or move to a safe area away from motor vehicles. Marked ambulance vehicles should be requested as needed to provide emergency lighting, cover from traffic, patient transport and further clinical assessment.

8. Prior to initiating bicycle duty, riders shall inspect their cycling equipment to ensure that it is in proper working order. If a problem is discovered that the rider cannot fix, notice shall be given to the shift duty station officer or other responsible party, who will forward it to the unit bicycle mechanic or other certified mechanic. The rider may take another bicycle for duty. The relevant documentation must be completed, e.g., trouble report and log book.

9. In times of bad weather, restrictions on deployment may be warranted due to heavy or prolonged rain, high winds, lightning, snow, sleet, extreme temperatures or when road conditions are otherwise perceived to be dangerous by either the individual or supervisor.

10. In periods of darkness, EMS cyclists must use legally mandated lights/reflectors and service-supplied reflective equipment and clothing.

11. The rules of the applicable Motor Vehicle Code (MVC) and any local regulations governing cycling and pedestrian behavior are to be followed. EMS cyclists should obey traffic lights and signs except during emergency response (if exemption has been granted) and if it is safe to proceed. Emergency warning lights and audible sirens are to be used, where not prohibited by MVC or local regulations, to warn non-motorized persons of an approach. They can also be used to protect the scene of an outdoor incident.

While riding on sidewalks during emergency activation (if permitted by local regulation), EMS cyclists must be alert to pedestrians, recognizing that they have the right-of-way. Whenever possible, riders should give an audible warning of their approach from the rear and maintain reasonable speeds and caution on all pedestrian areas.

12. During all operations, EMS cyclists shall:

- Wear an approved helmet, protective eyewear and gloves at all times while cycling.
- Use only bicycles equipped according to departmental protocol and approved by a certified mechanic authorized by the agency.

13. When leaving bicycles unattended (it is suggested the bicycle comes as close to the casualty as possible) riders shall, whenever possible, do the following:

- Secure bicycle with a locking device. EMS cyclists are not expected to secure bicycles when the situation does not allow, as in life-saving intervention.
- Take all reasonable precautions to ensure that the bicycle does not obstruct pedestrian or vehicular traffic unless protecting the scene.
- Remove and carry with them such easily removed items as the medical pannier bag (or inserts), helmet, computer, and lights.

14. During all operations, EMS cyclists shall carry full department-mandated medical equipment and laminated local protocols. It is generally agreed that a bicycle cannot carry full ambulance equipment. A needs assessment must be conducted to determine the type and amount of equipment, drugs, etc., to be carried in various situations. The inventory of drugs and equipment must be approved by the medical director. Equipment lists must be evaluated on an ongoing basis to ensure consistency with departmental policy.

Developments will be made to accommodate changes in equipment (e.g., weight and size). In situations that may need additional equipment, motorized vehicles will be dispatched. It is estimated that basic life support (BLS) can be sustained for eleven minutes with full oxygen supply for the solo responder.

15. In no circumstance shall the EMS cyclist delay the dispatch of a motorized ambulance vehicle if it is medically required. In some cases it may be possible to cancel the motor vehicle if the patient does

not require vehicle transportation or further clinical assessment. EMS cyclists must notify dispatch of all potential medical contacts and include their exact location.

16. In some cases the EMS cyclist may be dispatched without any further back up. A medical assessment must be undertaken and reported on at the earliest opportunity. In a running call situation, EMS cyclists shall request motorized transport for the patient if required.

17. An EMS cyclist shall not leave a patient without carrying out correct patient assessment and documentation or leave him or her unattended, unless an emergency exists that requires immediate action by the EMS cyclist and the cyclist is instructed to do so by superiors.

18. The EMS cyclist shall complete all documentation at the time of incident and carry out the process of submitting paperwork at the earliest convenience or in accordance with the normal procedure.

### **B. Personnel Selection and Pre-Qualification**

1. Candidates will be selected from standard application process. At least two years post EMT qualification and/or paramedic qualification with two years operational experience are required.

2. In order to reduce the risk of exercise-induced medical problems, pre-screening of candidates is recommended. Any physical fitness testing should be conducted by a qualified fitness and/or medical professional.

### **C. Training**

1. Candidates who pass the pre-qualification and are selected will undergo several training exercises which are administered by a qualified EMS Cyclist Instructor.

2. Selected riders must attend and pass a nationally recognized and standardized EMS cycling course. The EMS Cyclist Certification course consists of a minimum of 32 hours training at International Police Mountain Bike Association (IPMBA) standard. Professional membership (IPMBA or similar) on successful completion of the EMS Cyclist Course. Certification must be obtained and be current for active duty.

3. Advanced and specialty training is authorized only for those who have attended the standard basic course and who demonstrate above-average competency. All advanced and specialized training shall be authorized in accordance with the department selection application policy and as dictated by operational objectives.

4. Documented, periodic training is required; quarterly training is highly recommended. Training can be refresher to advanced, as determined the unit supervisor in conjunction with a qualified instructor.

5. Any EMS Cyclist who is absent from bike operations for an extended period should be evaluated by a qualified instructor. Based on the instructor's assessment, refresher training ranging from an eight-hour course to a 32-hour course should be provided.

### **D. Personnel Responsibilities**

1. Bicycle Team Supervisor. The team supervisor will oversee recruitment, pre-qualification, training (initial and ongoing), cycling standards, uniforms and equipment, maintenance, and deployment.

The bicycle team supervisor shall ensure the following:

a. Prior to riding a bicycle in an official capacity, candidates selected for duty with the cycle unit attend and pass the EMS Cyclist Course. All newly selected EMS cyclists shall attend the course

within three months of selection; however, reasonable accommodations may be made where necessary when dealing with scheduling conflicts and extenuating circumstances.

- b. All bike unit members complete the mandatory annual in-service training requirements, preferably at the start of the cycling season. Advanced training will be authorized on a case-by case basis if required.
- c. Cyclists ride the minimum number of hours each year, as established by this policy.
- d. Newly selected riders are provided with the uniform and equipment specified by the unit, and that only these items are used. This will consist of an approved bicycle, medical pannier bags, full clothing and protective equipment chosen and approved by the service. All items should be distributed prior to the start of the EMS Cyclist Course. A public safety cyclist should wear a helmet, gloves and protective eyewear at all times while mounted on a bicycle.
- e. Cyclists properly care for their equipment. Sufficient cleaning/maintenance supplies are to be available, and the bicycles, including medical equipment, are to be stored properly when not in use. The bicycle storage area is kept orderly, clean and all specified tools and equipment are kept locked in a secure area when not in use.
- f. A written inventory of all service equipment, including bicycle fleet and serial numbers, is maintained. This will include medical equipment and required servicing and restocking. All product information on the bicycle and medical equipment is to be made readily available to all staff, an open daily communications book is also to be made available and checked (e- mail and text must not solely be relied upon). Normal reporting procedure will be upheld at all times.
- g. A log book for each bicycle is maintained by the individual to whom it is assigned, to include maintenance and damage reports. Equipment shall be properly replaced when it is damaged beyond repair. Disciplinary action will be initiated if it is deemed that negligence was involved in damage to equipment. If minor damage is sustained during the shift, the EMS cyclist shall notify the shift officer/ log it in the daily reporting book and vehicle log book by the end of the shift. If substantial damage to the bike or injury to the rider or a civilian is sustained the rider shall immediately notify the shift duty officer and complete all necessary service documentation.
- h. A management database of bicycle fleet servicing shall be maintained. Maintenance and repairs shall be carried out by a local certified cycle shop or an in-house mechanic who has had training in the maintenance of EMS bicycles (e.g., the IPMBA Maintenance Officer Certification Course). All maintenance and damage reports will be assigned to a certified bicycle mechanic within one week of notification. The bicycles will be repaired in a reasonable amount of time; no longer than three weeks is expected for any repair to be completed.

2. Bicycle Team Members. Bicycle team members shall carry out the tasks necessary to achieve the unit and agency goals.

EMS Cyclists shall:

- a. Adhere to all policies and procedures that direct activities of EMS Cyclists.
- b. Conduct bicycle-mounted operations as directed.
- c. Attend and pass the department basic bicycle operations course, to include basic maintenance.
- d. Attend and pass all required bicycle refresher course training.
- e. Perform routine bicycle maintenance on their assigned equipment.
- f. Be accountable for all bicycle-related equipment assigned to their care, and make reasonable effort to ensure its security.

- g. Wear the bicycle uniform, appropriate footwear, and personal protective equipment as specified.
- h. Utilize bicycles in accordance with the following minimum standards:
  - Whenever directed to do so by a supervisor.
  - The minimum number of hours per week as dictated by this policy.
- i. Exercise discretion when the temperature is below 40 degrees or above 90 degrees, or during adverse weather conditions.
- j. Report damage to bicycles and related equipment.
- k. Utilize their department bicycles for off-duty assignments only with a supervisor's prior approval.
- l. Ride their department bicycles to and from work with only a supervisor's prior approval.

## IPMBA EMS Bike Team Concept & Issues Paper

### I. Introduction

#### A. Purpose of Document

This document is designed to accompany the **Model Policies and Procedures for EMS Bike Teams** established by the International Police Mountain Bike Association (IPMBA). It provides essential background material and supporting documentation to provide greater understanding of the development philosophy and implementation requirements for the model policy. This material will assist the EMS service in their efforts to tailor the model to the requirements and circumstances of their patient care delivery system and performance targets.

#### B. Background

One of the growing trends in emergency medical care delivery is the use of bicycle units. EMS bike teams can be deployed seasonally or year-round depending on the location and climate of the area, or on a full-time, part-time, or special event basis.

There are several reasons to use bicycles, including cost effectiveness, mobility, maneuverability in congested areas, accessibility to the community, and environmental friendliness. They are also very versatile and can be used for special event medical coverage, regular EMS deployment, community outreach and education, and in tactical situations.

The differences in EMS delivery between personnel in motorized vehicles and those on bicycles necessitate specific policies, protocols and procedures for these specialized units so that they can be effectively deployed in an official capacity.

#### C. Advantages of EMS Bike Teams

EMS bike teams have several advantages over other modes of response that make them appealing to ambulance services. EMS bike teams provide a high-profile community patrol, rapid response and an effective system of unneeded ambulance cancellation. This provides the agency with more motorized ambulance availability as well as fuel savings.

*Awareness.* Public safety cyclists are better able to use all of their senses to identify distress help. They are more aware of their surroundings and can employ their senses of smell and hearing, for example, to full advantage. They can use these senses to detect situations that would be overlooked by personnel in motor vehicles.

*Accessibility and Maneuverability.* In congested areas, the EMS cyclist can provide additional speed when responding to priority calls for ambulance service because the rider can maneuver easily between vehicles, take shortcuts through alleys, parks and travel on sidewalks. Bicycles have easy access to any minor road/ pedestrian area, parks, trails, multi-use pathways, sporting complexes and outdoor arenas. Bicycle use in airports and shopping centers allow riders the opportunity to ride virtually anywhere, providing easy deployment of a medical person to someone in a crisis situation.

As noted, the rider can be critical in reducing response time to various types of service calls. In heavily congested areas, the rider can respond to an emergency situation sometimes more quickly than a motorized vehicle because of the maneuverability between cars and the ability to take short cuts through areas inaccessible to motor vehicles.

During natural and manmade disasters, bicycles are quite effective at taking on the role of first responders where accessibility is limited and maneuverability is essential. In such situations, bicycles are often a more efficient means of accessing and assisting patients and relaying information if

communications problems occur. Personnel on bikes were among the first to respond to the terrorist attacks in New York City on September 11, 2001, and the London subway bombings on July 7, 2005.

*Approachability.* EMS providers who ride bicycles in residential areas, tourist areas, business districts and academic campuses, etc., are far more approachable to the public than those in motor vehicles. In addition, community members typically perceive cycle riders as less authoritarian and are therefore more likely to welcome them. This often leads to improved communication between the public and the EMS service, resulting in greater understanding and community support.

*Cost Efficiency.* A cost-benefit analysis comparing bicycles to motor vehicles would show that the benefits provided by bicycles come at a lower cost when considering the purchase price of bicycle and accessories, maintenance costs, and life expectancy. It is significantly less costly to purchase bicycles than motorized vehicles such as golf carts. Bicycles do not require fuel to operate or, unless electric, require replacement batteries or downtime for charging.

*Environmental Benefits.* Bicycles do not create air or noise pollution, do not add to traffic congestion, and take up few, if any, parking spaces. They can be carried on bicycle racks and used to supplement motorized vehicles, reducing the amount of shift time the engine is running and emitting pollutants.

#### **D. EMS Cyclist Applications**

*Community Service/Bicycle-Pedestrian Safety Education.* EMS riders are particularly well suited to fostering closer EMS-public interaction and engagement. This can be accomplished on a daily basis during normal operations as well as through community service functions such as bicycle rodeos, helmet giveaways, school bicycle demonstrations, and bicycle safety presentations. Active EMS cyclists are also in a position to serve as positive role models and can effectively deliver public safety health messages and information.

A knowledgeable EMS cyclist may be able to work with transportation officials and traffic engineers to incorporate bicycle facilities into transportation plans. If an EMS cyclist obtains instructor certification, he or she can offer educational classes to the public on safe and effective cycling.

*Special Events.* Bicycles are one of the most effective EMS delivery methods during special events. Their mobility enables them to operate quickly and efficiently in crowd situations such as competitions, festivals, carnivals, parades, outdoor concerts, recreational runs and rides, and sporting events. They can be used to supplement medics on foot, in golf carts, and in motor vehicles. Their rapid response time enables them to arrive on scene quickly, administer medical care, and determine if further care and/or transport is required. If transport is not required, the ambulance remains available for more serious calls. Pre-planning special event coverage is essential to its success.

*Disaster Response.* During natural and manmade disasters, bicycle-mounted personnel are often first to respond because accessibility is limited and the ability to maneuver around obstacles is essential. During the tragic events of September 11, 2001, in New York City, bike messengers provided supplies, emergency equipment, first aid, and food and water to victims as well as rescue workers. Bike officers and paramedics were the first to respond to the 2005 London subway bombings, and public safety cyclists are frequently deployed in the wake of hurricanes and other weather emergencies (References: Raulerson, Gary. "Hurricane is Busy Season for Bike Cops", *IPMBA News*, Vol. 22 No. 3, Summer 2005; Brooks, Karen. Bikes to the Rescue. *Bicycle Times*, Issue 21, 2013).

*Crowd Situations.* EMS bike teams can be used in potential crowd situations, especially those involving bike-mounted police officers. If properly trained, EMS cyclists can work in conjunction with Bicycle Response Teams, providing medical coverage to tactical team members and other involved parties. Bicycles can be extremely effective during special events, including small- and large-scale amateur and



professional athletic events, festivals, street fairs, carnivals, parades, concerts, or any other potential crowd management/control situation. Medical emergencies at these special events often occur in areas that are not accessible by motor vehicle and can be too far away to quickly reach on foot.

*Search and Rescue.* Bicycles can be integrated into search and rescue operations, using properly trained personnel equipped with global positioning systems (GPS) and enhanced radio systems. Bikes are well-suited for hasty searches, in which the objectives are to swiftly survey and inspect areas of high probability for clues or information of the subject's whereabouts, as well as gain familiarity with the area. In residential areas, the frequent disappearance of children and the elderly suffering from Alzheimer's disease and related dementias calls for an effective and innovative approach to searches. In rural areas, the bicycle can be effective on trails and in wilderness settings. Bicycles permit first responders to quickly access emergency routes, locate and assist victims, and either guide more advanced life support to the scene or assist the victim in moving to a more easily accessible area.

## II. POLICY RECOMMENDATIONS

### A. Limitations and Restrictions

EMS bicycles offer an effective means of service delivery in certain situations; however, there are a number of factors that must be taken into consideration during operational planning.

*Geography.* Although EMS cyclists have a distinct advantage in congested areas and in relatively small geographical areas, they are obviously limited when responding to emergency calls for service more than a mile away. Therefore, an EMS cyclist working a larger geographical area is usually not dispatched to emergency calls but may elect to respond if in close proximity or if motorized units are unavailable. Likewise, if an event covers a large venue, EMS cyclists must be strategically staged throughout the area to minimize response time.

*Operational Area.* Bike medics should be intimately familiar with their operational areas, especially the various obstacles, stairways, paths, parking blocks, and all other objects that could result in injury or even death if unexpectedly encountered while taking responding to an emergency call. During special events, awareness of egress points, less congested areas, and resupply locations is essential.

*Weather/ Environmental Conditions.* Weather-related deployment restrictions may be warranted. Bicycles are best deployed when the temperature range is between 40 and 90 degrees Fahrenheit. However, elevation and humidity may increase or decrease this zone of operation. Agencies may elect to restrict deployment during times of heavy or prolonged rain, high winds, lightning, snow, sleet, temperatures below freezing or when road conditions are otherwise perceived to be dangerous by either the individual or the management team.

*Communications.* Communication is essential. EMS cyclists do not have vehicle locators, and if they become injured or engaged in an incident, other units may be unable to find them unless their position has been verbally communicated. EMS cyclists may lack access to the more powerful and reliable vehicle-mounted radios, so they should be equipped with alternate means of communications, such as a mobile communication device, in addition to their portable radios. EMS cyclists should use an ear microphone attachment to their portable radio. During standby (in busy pedestrian areas/events) and in quiet locations, radio sounds travel easily and can allow the public to hear sensitive information.

Communication between EMS cyclists working together as a team is also important. Riders riding in pairs need to remain aware of one another's location whenever separated for any substantial period of time, particularly when riding after dark.

*Safety Considerations.* There are certain safety issues unique to EMS cyclists. The lack of protection typically afforded by a motorized vehicle requires that riders constantly scan their environment for potential threats and exit routes. EMS cyclists should be trained to recognize potentially dangerous or threatening situations, and have a procedure in place for responding to such situations that follows department procedures. Such procedure should address withdrawing from the scene, calling for back-up, defensive measures, etc.

Just like a member of staff performing ambulance vehicle duty, the EMS cyclist should never disregard the use of a retreat. Since the bike rider does not have the immediate protection of a vehicle, a retreat should always be an option if necessary. The EMS bicycle can be used as a barrier between the rider and the aggressor, if the rider is trained to do so.

Policies should also address any specific situations to which EMS cyclists should not respond (e.g., areas of high-speed traffic or hazardous conditions).

*Equipment Security and Load Placement.* Due to the bicycle rider's riding position – leaning forward with arms outstretched – equipment worn on a utility belt or equipment vest are easily accessible and therefore vulnerable, particularly when riding through crowds. Riders should be constantly aware of this possibility. In some cases, walking the bike through heavy pedestrian traffic may be a better option than riding. As an added precaution, riders should position as many tools forward on their utility belt and tuck away any radio cables as safety, convenience and comfort permit.

The EMS bike is a transport platform for the medical equipment necessary to render effective patient care. The EMS cyclist must be able to balance the equipment needs for patient care with the potential space and weight limitations of the bike and selected bag/pannier options. Securing of medical equipment and medications, especially controlled substances, are a unique concern for EMS cyclist. Narcotics should be carried by the rider in a waist pack or pouch on a duty belt or vest. The zippered bags in which blood pressure cuffs are packed may be used for this purpose.

*Pedestrian Facilities.* While answering emergency calls, EMS cyclists can often be more effective while riding on sidewalks and in pedestrian areas rather than in the roads. However, Riders should not ride on sidewalks in areas where they are prohibited or in designated pedestrian-only zones unless otherwise authorized by emergency response, or when exempted from prohibitions due to their status as emergency vehicles.

Pedestrians have the right of way and when possible, riders should give an audible warning when approaching from the rear. Unless circumstances dictate otherwise, riders should ride to the outside of the sidewalk to avoid persons entering and exiting buildings and unless extreme circumstances exist, they should ride at speeds that are reasonable and that do not endanger persons or property. Extra care and caution should be exercised due to the unpredictability of pedestrians, children, pets, luggage and other business activity.

*Night Operations.* During hours of darkness, EMS cyclists are encouraged to stay out of the street because of poor visibility and the danger of impaired drivers. However, because it is hard to avoid riding in the street, riders must be visible to motorists approaching from the rear and the side. By using a combination of active and passive lighting on their bodies and their bicycles, EMS cyclists can help ensure they are both seen and recognized as a person on a bicycle. Retro-reflective seams and lettering across the back of the uniform and high-visibility clothing enhance visibility, as do bike-mounted reflectors and flashing LED taillights.

Headlights and rear lights should be used as required by state and/or local law. However, in many jurisdictions, the legal lighting requirements for cyclists are deemed inadequate by standards organizations such as IPMBA; therefore, riders should follow the guidelines set for public safety cycling

(currently defined as 42 lumens at 10 feet and 9 lumens at 20 feet). Light systems should be selected for their visibility and battery life. Bicycle lighting systems can be used not only for lighting the path the rider is travelling and warning of upcoming obstacles, but also for patient assessment. For this application, helmet-mounted lights can be a practical option.

*Accidents and Injury.* EMS cyclists are vulnerable to injury from collisions with vehicles and other objects because the rider must maintain balance at all times, including while operating in crowds and heavy traffic; therefore, the chance of falling and sustaining injury are omnipresent.

Proper training that includes obstacle-avoidance techniques and bicycle handling skill development will reduce the risk of crashes and related injuries. Bike-specific patrol procedures and tactics will teach the officer how to enhance his or her safety during contacts of varying threat levels.

Preventive measures should be taken to avoid the common cycling discomforts and injuries that can result from improper technique; inferior, absent, or inappropriate equipment; and incorrect equipment adjustment, especially improper bike fit. Warming up pre-ride and stretching post-ride are recommended.

The risk of injury from encounters with criminal activity is also greater for an EMS provider on a bike than one in an ambulance. Because the rider patrolling on a bicycle can easily access areas that are not accessible to motorized units, the probability of encountering criminal activity is greater. This provides a solid advantage for police but simultaneously increases the risk of unwanted encounters to EMS. Such surprises can elevate the risk of injury from a fall and other means. For these and related reasons, riders should not approach such areas or take on the role of the police. They may, however, report their findings to the police.

## **B. Physical Qualifications**

Physical fitness is important to EMS cyclists because they are subject to greater levels of exertion than personnel operating motor vehicles, both during general patrol and during emergency response. In order to reduce the risk of exercise-induced medical problems, pre-screening is recommended.

A basic pre-screening tool is the Physical Activity Readiness Questionnaire (PAR-Q), developed by the Canadian Society for Exercise Physiology.<sup>(1)</sup> A “yes” to any of the questions on the self-administered questionnaire triggers a medical screening to detect underlying risk factors. Common screening methods related to heart rate recovery are the three-minute step test<sup>(2)</sup> and the cycle ergometer sub-maximal test<sup>(3)</sup>. Any physical fitness testing should be conducted by a qualified fitness and/or medical professional.

A basic cycling skills assessment (e.g., three-mile or one kilometer time trial and a simple cone course) may also be incorporated to assess cycling aptitude.<sup>(4)</sup>

An example of a comprehensive pre-screening developed by the London (UK) Ambulance Service Cycle Response Unit and the Crystal Palace Sports Medicine Centre<sup>(5)</sup> and other pre-qualification programs can be found at <http://www.ipmba.org/>.<sup>(6)</sup>

### *Associated references:*

1. The PAR-Q can be obtained by visiting <http://www.csep.ca/pdfs/par-q.pdf>
2. <http://www.exrx.net/Testing/YMCATesting.html#anchor81473>
3. [http://www.csep.ca/cmfiles/certifications/cpaflainsert/09\\_YMCA\\_Cycle\\_Ergometer\\_Submaximal\\_Test.pdf](http://www.csep.ca/cmfiles/certifications/cpaflainsert/09_YMCA_Cycle_Ergometer_Submaximal_Test.pdf); (Sources: Golding, L. 2000. *The "Y's" way to Physical Fitness*. Human Kinetics, Champaign, IL; ACSM, 2007. ACSM's Metabolic Calculations Handbook. ACSM, Indianapolis, IN)
4. A time trial (e.g., three mile or one kilometer) consists of a designated course, preferably flat and with minimal turns, free from traffic interference or other safety issues.

5. Lynch, Thomas. *London Ambulance Service CRU Health and Fitness Screening*, IPMBA News, Vol. 14, No. 2, Spring 2004; <http://ipmba.org/blog/comments/london-ambulance-service-cru-health-fitness-screening>.
6. Picquet, Scott. *Chandler Police Department Bike Team Qualification Process*, IPMBA News, Vol. 22, No. 1, Winter 2013; <http://ipmba.org/blog/comments/chandler-police-bike-team-qualification-process>.
- Blackington, Neil. *Spring Tryouts: Boston EMS*, IPMBA News, Vol. 14, No. 2, Spring 2004; <http://ipmba.org/blog/comments/spring-tryouts-boston-ems-bike-team>.
- Ricciardi, Robert. *Three-Mile Time Trial*, IPMBA News, Vol. 10, No. 4, Fall 2001; <http://ipmba.org/blog/comments/three-mile-time-trial>.
- Ganzel, Dan. *Physical Standards for Police Cyclists*, IPMBA News, Vol. 11, No. 3, Summer 2002; <http://ipmba.org/blog/comments/physical-standards-for-police-cyclists>.

## C. Training

*Initial and In-Service Training.* A certified instructor using a certified training course should conduct initial EMS cyclist training, preferably a course sanctioned by a nationally recognized organization such as the International Police Mountain Bike Association (IPMBA). The minimum standard for the initial course of instruction recommended by IPMBA is 32 hours.

In-service training should consist of at least eight hours of bike-specific training annually; however, quarterly training is highly recommended. Seasonal cyclists will benefit from refresher training at the beginning of the bike patrol season. Any bike medic who is absent from bike patrol for an extended period should be evaluated by a qualified instructor. Based upon the instructor's assessment, refresher training ranging from eight hours to the 32-hour course should be provided. Training should incorporate physical cycling skills, a review of departmental bicycle policy, and advanced and/or mission-specific training.

*Advanced and Specialty Training.* When possible, EMS bike team members should be afforded access to advanced training programs should be developed by nationally certified bike instructors, such as those available at the annual IPMBA conference. When this is not possible, training can follow a team approach, in which a cycling instructor works with instructors from different disciplines to develop cycling-specific training programs that meet the department's needs.

Further professional development of EMS cyclists can include the following types of training. These are encouraged for rider preparedness, personal development and long-term cost savings to the organization.

- IPMBA Public Safety Cyclist II Certification
- IPMBA Maintenance Officer Certification
- IPMBA Bicycle Response Team Training Certification
- IPMBA Instructor Certification
- Annual IPMBA Conference and Related Seminars
- Search and Rescue

*Fitness and Wellness Training.* Certain types of on-going physical training, such as interval and anaerobic threshold training, can improve an EMS responder's physical capacity. As such, EMS cyclists should take advantage of training and physical wellness opportunities that will permit them to achieve and maintain optimal physical performance. In keeping with departmental policy, bike team members should be encouraged to use approved on-duty time for fitness training at the level required for bike patrol team members.

EMS cyclists must develop an understanding of their physiological limitations and stay within those limits. If required to sprint to a scene, the rider must have sufficient energy reserves to perform such ambulance functions as patient intervention and verbally communicating clearly with patients,

bystanders and dispatchers. In training, the riders should do cycle sprints of varying distances, some up to a mile in length, to learn how to adjust their effort level and technique.

Along with being physically fit and appropriately trained, EMS cyclists must be knowledgeable of relevant health and nutrition issues. EMS cyclists generally exert a tremendous amount of energy during a shift. Replenishing this spent energy is essential to muscle and system recovery, and for avoiding chronic fatigue and injury.

EMS cyclists lose substantial amounts of water through physical exertion; therefore, proper hydration is essential. They should be educated as to proper hydration habits and how to recognize the signs of both dehydration and hyponatremia (low sodium levels). On-bike water storage (e.g., bike-mounted water bottle cages) is essential.

In certain climates, EMS cyclists risk heat exhaustion and heat stroke. In such areas, in-service training should include the prevention, recognition, and treatment of heat exhaustion and related problems. The use of moisture-wicking material for uniforms, while appropriate in all situations, is essential in warm climates. Similarly, those who ride in cold weather should be properly educated as to clothing material selection; the proper technique for layering clothing; adequate skin coverage; and the prevention, recognition, and treatment of frostbite and related ailments.

Riders in all climates must be made aware of the dangers of skin damage from the sun's damaging rays. Application of sunscreen year-round should be required; agencies should consider making sunscreen available as a protective measure against skin cancer. Wearing long-sleeved uniform shirts and long pants year-round is also an option.

#### **D. Equipment**

*Bicycles.* EMS cycling equipment must be able to withstand the many rigors of constant use in order to meet cost-effectiveness requirements as well as to minimize the chances of rider injury. Inferior equipment wears and breaks more easily and quickly therefore the service should be prepared to purchase the best possible equipment. Only bicycles authorized by the department and a certified mechanic to make ready, repair and service them should be used for duty. A list of suitable bicycle equipment appears in Appendix A of this document. If possible, each rider should be assigned his or her own bicycle, and be held responsible for its general maintenance and operational integrity.

Riders should be required to inspecting their equipment prior to the start of their shifts to ensure that it is in good, safe and working condition. The ABC Quick Check should be conducted prior to any ride. This is a brief overview of the major components of the bicycle, including air, brakes, cranks, and quick releases.

If a problem is identified with a bicycle or other equipment, the responsible party should be notified as soon as reasonably possible. If necessary, the bicycle or related equipment can be taken out of service and another requested or the problem corrected. A program of preventive maintenance should be established and followed. All related repair paperwork must be updated every time maintenance is performed on the bicycle. To avoid misuse and theft, all tools should be secured in a locked maintenance section of the bicycle storage area.

*Safety Equipment.* EMS cyclists are required to utilize the following pieces of safety equipment: a high-quality bicycle in good mechanical condition that is serviced regularly and fits the rider properly; a properly fitted, approved bicycle helmet; shatter-resistant protective eyewear for day and night time use; and pedal retention devices. Gloves, either padded or unpadded, are strongly recommended.

**Equipment Carriers.** Equipment carriers should be selected based upon the application. Backpacks, trunks, and panniers (rear and front), are all options. Most teams find pannier bags of varying designs to be most practical. Pannier bags must be highly visible, identifiable and fixed securely to the bicycle with the medical equipment easily accessible. Equipment must be packed such that vulnerable equipment and controlled substances are protected and weight is equally distributed. Panniers designed specifically for EMS use typically have built-in pouches and pockets for organizing equipment, accommodate small O2 tanks, and often display the Star of Life.

**Security.** EMS cyclists should secure their bicycles and equipment when left unattended whenever reasonably possible and in a manner that does not obstruct pedestrian or motorized traffic. The bicycle should be secured by the frame, not the wheel or seat. When possible, as in the case of a meal break, the rider should secure it in an easily monitored location and/or remove any vulnerable equipment (helmet, EMS pannier bags) to avoid theft or damage. Riders are not expected to secure bicycles in urgent situations, such as life-saving intervention. When a rider is not on duty, the bicycle should be stored inside a secure location.

## **E. Uniforms and Personal Protective Equipment**

**Uniforms and Footwear.** The level of physical activity coupled with exposure to varied weather conditions, makes uniform material selection essential to the health and comfort of the bike medic. Appropriate clothing can contribute to optimal performance without undue risk to health. Uniforms designed specifically for use by EMS cyclists are strongly recommended. They are available in a range of styles, from casual to Class A. Uniforms should be consistent in color and features of standard uniforms to enhance recognition. A sample uniform package is included in Appendix B.

Riders must wear suitable footwear on patrol to prevent injury caused by the pressure exerted on the bottom of the foot during the pedaling motion. The force that is applied while pedaling is concentrated into an area the size of the pedal, unless a hard-soled shoe is worn to disperse it. If a soft-soled shoe is worn, the foot will “bend” over the pedal, causing pain and eventually damaging the ligaments in the bottom of the foot. Plantar fasciitis is a common overuse injury resulting from improper footwear.

If EMS personnel are required to wear body armor, EMS cyclists should be no exception. Riders should wear protective body armor in all weather. Body armor protects the rider not only from projectiles and slashing movements of edged weapons but also from blunt force trauma if he or she crashes or is struck by a vehicle. Body armor must be approved by the department and comply with all legally mandated protective requirements.

## Appendix A: EMS Bicycle Equipment

### Bicycle and Components

- High-quality bike, from a reputable manufacturer, properly sized to the rider, well-constructed and marked according to department policy:
- Front suspension forks: reputable brand, minimum 80 mm travel, mid-level model or better
- Braze-ons or other mounting points or hardware for mounting a rack capable of carrying panniers or trunk bags
- Drivetrain: Shimano LX, SLX, or SRAM 7.0, X7 or better
- Brakes: Shimano LX, SLX, or SRAM 7.0, X7 or better
- Wheels: Reputable brand, 26-29", comprised of mid-level components or better; 22mm width (min.) x 36-hole rim, stainless-straight 14-gauge spokes, brass nipples
- Handlebar stem adjusted to rider's comfort
- Reputable brand threadless headset
- Shifters: SRAM "Grip Shift" "trigger" 7.0, X7 or better, or Shimano LX, SLX "Rapid Fire" shifters or better
- Quick releases: front and rear wheels, seat post (optional)
- Saddle: traditional or alternative as per rider preference and comfort (see National Institute for Occupational Safety and Health (NIOSH) recommendations)
- Pedal retention
  - Clips and straps or similar
  - Flat pedals with compatible shoes
  - Clipless (at rider expense, if properly trained and approved for use)
- Bar ends (for leverage, additional hand positioning)
- Tires: street/combo tires (size 26-29" x 1.5" - 26-29" x 2.1"; no knobbies; "plus" or "fat" bikes may be suitable under certain conditions)

### Bicycle Accessories

- Two lightweight, durable, and functional water bottle cages affixed to frame of bicycle
- High quality rear rack with a carrying capacity of at least 50 pounds
- Basic on-bike tool kit, including hex wrenches 2mm – 8mm, Phillips and flathead screwdriver, chain tool, blade (e.g., multi-tool); tire levers.
- Two spare tubes (Presta or Schrader valves as required by wheel rim type)
- CO<sup>2</sup> dispenser and CO<sup>2</sup> cartridges, mini-pump or other air source (tube compatible)
- Locking cable or other bike locking device
- Headlight: Reputable brand, high light output of 42 lumens (measured at 10 ft) or more, and rechargeable
- Taillight: Reputable brand, integrated or independent flashing LED taillight
- Legally mandated reflectors
- Emergency lighting and audible warning device as per departmental policy and local regulation
- Rear-mount or two-legged kickstand
- Cycle computer
- Medical pannier set

**Appendix B: EMS Equipment**

This is an example of a BLS bike and an ALS bike operating as a team. Each medical bike team must assess its own situation and determine how to equip its bike medics to best serve its constituency. Decisions about the equipment, drugs, and other supplies to be carried should be made in conjunction with the agency medical director.

**Basic Life Support Bike (BLS) (approximately 15 pounds)****Rack Bag** (contains the lightest, most readily used and accessible equipment)

- 6-10 sets of exam gloves
- 1 disposable mask with fluid shield
- 1 heavy trauma dressing
- 2 ABD Pads (absorbent wound dressing)
- 5-10 sterile 4x4s
- Assorted band-aids, antibiotic ointment and cleansing wipes
- 1 roll of 2-inch tape
- 3 triangular bandages
- 1 roll of gauze
- 1 elastic bandage
- 1 SAM splint (moldable splint)
- 1 blood pressure cuff and stethoscope
- 1 biohazard red bag
- Anaphylaxis kit
  - 1 TB (tuberculin) 1-cc syringe
  - 1 3-cc syringe with 21-gauge needle
  - 1 ampule epinephrine 1:1000
  - 1 50 mg in 1 cc vial of benadryl (diphenhydramine)
  - 2 alcohol preps
  - 1 disposable sharps shuttle
- Bike tools
  - Patch kit/spare tube
  - Tire levers
  - Multipurpose tool

**Non-Drive Side Pannier**

- Bag valve mask (BVM)
- 100 mm, 90 mm oral pharyngeal airway
- Combitube or PTL

**Drive Side Pannier**

- 1 500 cc normal saline
- 1 10 gtt (drops per ml) tubing, primary IV line
- 2 each 22, 20, 18, and 16 gauge IV catheters
- 1 sharps shuttle

**Advanced Life Support Bike (ALS) (approximately 24 pounds)****Trunk Rear Rack Bag**

- 1 glucometer with test strips and finger stick device
- 1 amp of D50 (50% dextrose)
- 1 1-mg dose of glucagon



- 2 epinephrine 1:10,000
- 1 atropine
- 2 lidocaine
- 1 150-mg solumedrol
- 1 nitroglycerine spray
- 1 bottle of low-dose chewable aspirin

**Drive Side Pannier**

- AED or cardiac monitor
- **Non Drive Side Pannier**
- M6 O2 cylinder and regulator
- Intubation roll
- 1 nasal cannula
- 1 non rebreather
- 1 nebulizer with 2 albuterol

**Appendix C: Maintenance Supplies**

*The following supplies and equipment are usually made available to all EMS cyclists in agencies where riders perform their own basic maintenance:*

- Bicycle repair stand
- Chain cleaner
- Degreaser
- Dish soap
- Assorted, stiff-bristled brushes
- Rags and bucket
- Chain lubricant
- Waterproof grease
- Spray bottle for degreaser solution
- Frame polish
- Tubes
- Patch kit
- Floor pump with PSI gauge
- Headset wrenches
- Spoke wrenches or one multi-size wrench
- Tire levers
- Pedal wrench
- Allen wrenches (4mm, 5mm, 6mm, 8mm)
- Gear brushes
- Chains
- Chain checker or ruler
- Cables, housing, ferrules, caps

*The following supplies and equipment are reserved for use by certified mechanics in those departments with one or more personnel trained as maintenance officers:*

- Toolbox
- Bottom bracket tool
- Free wheel lockring tool
- Professional grade ball end hex wrenches
- Cable/housing cutter
- Torque wrench
- Ratchet
- Large crescent wrench
- Cone wrenches
- Crank puller
- Complete set of screwdrivers, Phillips and flathead
- Chainwhip
- Full-sized chain rivet tool
- Pliers

## Appendix D: Clothing and Equipment

### Clothing

- Three long-sleeved, cold weather cycling shirts, appropriately sized, technical fabric (wickable, breathable, designed for comfort during exertion), with hidden zipper with exposed faux buttons, custom department badge patch, microphone tab on shoulders, standard shirt pockets similar to those on class A uniform (or golf-style shirt for a more relaxed appearance)
- Three short-sleeved, warm weather cycling shirts, appropriately sized, technical fabric, with hidden zipper and exposed fake buttons, customized department badge patch, microphone tab on shoulders, standard shirt pockets similar to those on class A uniform (or golf-style shirt for a more relaxed appearance)
- Three pair uniform cycling shorts, appropriately sized, technical fabric
- Cold weather/rain cycling jacket, appropriately sized, with “EMS” in retro-reflective four-inch letters across the back, retro-reflective seams, badge patch on left chest area, exterior pen slots
- Cold weather/rain cycling pants, appropriately sized, technical fabric
- Cold/wet weather accessories, such as headbands, ear warmers, neck warmers, full-fingered winter gloves
- Undershirts, short- and long-sleeved, technical fabric
- Padded cycling shorts
- Cycling socks, technical fabric, of approved color and style
- Cycling shoes, appropriately sized, designed for public safety cycling or otherwise meeting uniform requirements.

### Personal Protective Equipment

- Helmet that meets current safety rating, appropriately sized and marked in accordance with departmental policy
- Wraparound, shatter resistant eye protection, clear and tinted lenses
- Padded cycling gloves, half- and full-fingered
- Body armor that is lighter in design, but equal to or greater in threat level, than standard-issue armor (if routinely worn on duty)
- Equipment vest carrier (if routinely worn on duty)

### Other Equipment

- Ear microphone
- Rechargeable flashlight worn on the belt