

THOUGHTS ON AID BAGS

PART TWO

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This is the second of two articles intended to provide lessons learned and theories and techniques on packing an aid bag for the urban direct action (DA) environment. As stated in Part One, these articles are by no means meant to be conclusive, free of error, or enduring. They have been developed from five years of experiences in Operation Iraqi Freedom (OIF) and are meant to provide information to assist in present operations, and to serve as a platform for further development and evolution. Remember, these theories were developed in the strict conditions of urban operations in Iraq and thus, provide a sustained capability and confident means of evacuation. Conducting a thorough mission analysis will provide what's needed to tailor medical requirements outside of those lines. The authors highly recommend that the first article should be taken in conjunction with this second part to provide a complete framework of thought and theory.

As mentioned in the first article, it is possible to achieve both a high level of care and a broad depth of supply. The equipment and supplies packed in vehicle resupply and litter kits, the items carried by cross-trained team Medics, and the aid bags on the evacuation platform as well as the mission aid bags provide the sustainability and Class VIII supply that you need for worst case scenarios. This even includes individual supplies carried by the Soldiers within the unit, as these supplies could accumulatively provide care for all personnel. Although the depth of care encompasses the entire spectrum, it should be reasonable to provide for some sustainability out of the aid bags alone.

Opinions for packing an aid bag are as diverse and debated as any tactic, technique, and procedure (TTP). There are numerous theories and priorities based on the situation, mission, and threat assessment and evacuation. The term "aid bag" is almost a misnomer; it implies that a Medic can carry everything needed in a single bag. This may be true in Combat Trauma Management (CTM) scenarios, but in truth this is far from reality. The aid bag fills one role in the depth of care theory, and should always be considered as part of the larger capacity to prepare for any worst case scenario in combat

trauma. Because of the supplies and staging that can be achieved with depth of care, aid bags can be task organized more purposefully to provide advanced procedures at the point of injury. Room and weight in aid bags should not be sacrificed for redundant items such as Kerlix, dressings, or fluids since these can be massed from the Soldiers within the unit. Technology, supplies, and TTPs also constantly evolve, requiring the Medic to continually reevaluate and develop better methods.

THE ASSAULT AID BAG

The assault aid bag can come in a variety of types, sizes, and manufacturers' designs, but a key principle to look for is a low profile so as to not hamper the ability to move tactically (see Figure 1). Whether in the assault or moving to provide care, speed and agility is absolutely es-



Figure 1: A few examples of low profile, commercially sold assault aid bags.

sential for success in this environment. So, an aid bag size and placement has a major impact on those concerns. The size and depth of previous aid bags prevented best speed and mobility in the urban environment and would not allow easy maneuverability with others in close quarters. Additionally, an aid bag should be modular and as flexible as possible for the Medic to reconfigure and meet the requirements of as many types of missions as possible. Modular designs, multiple accessories, options for pock-

ets and retaining flaps, and of course, a liberal use of Velcro hook/pile taping allows for full use of the imagination and space provided.

An aid bag, with Velcro pile engineered as a liner on the inside of the whole bag, allows the removal of excess pockets and netting which affords more options for use of space. Small pieces of Velcro tape reinforced with a couple of small drops of super glue can be placed on kits and equipment allowing the Medic to tag and secure these items to the inside of the bag without fear of losing them. Even if the bag is moved or dropped while still open, a high level of confidence can be maintained that the supplies will not be lost. The super glue reinforces the adhesive of the Velcro tape attached to items even in the worst conditions of heat and use, ensuring that the tape will not come off. Utilizing this method allows the Medic to remove the netting and pockets, allowing another inch of space and width to provide more usable space or decrease the overall profile of the aid bag (Figure 2).



Figure 2: Every item in this aid bag is secured by using the Velcro pile lining (seen at the top) as an anchor but still allows quick identification and access of supplies by any member of the force.

The current SOF issue M9 Aid Bag was specifically developed for operations in Baghdad, Iraq. Experience has taught us that mobility and speed are vital in the urban environment. However, the aid bag should still provide enough room and have a flexible configuration for adaptability and ease of use without hampering operations. The depth of the aid bag was reduced by both lengthening and widening it while still retaining the same cube space. This flattening of the aid bag is what allows the Medic to move unimpeded through a house with other Soldiers. It raises the center of gravity to increase the Medic's ability to negotiate obstacles such as walls and windows. It also allows the Medic to sit in confined spaces and on small

seats in vehicles and aircraft without compromising comfort or causing fatigue. Medics must ensure the M9 bag is not packed beyond capacity, thereby negating its inherent advantage (see Figure 3).



Figure 3: The difference between packing your bag for an assault and packing your aid bag with the kitchen sink results in how much speed and maneuverability you have.

As a general rule, the assault aid bag should provide lifesaving capabilities that may be needed in the first ten minutes of a wound or injury. This time represents the interval that may be required to recover the backup aid bag in order to treat either an urgent multi-system trauma or a mass casualty (MasCal) scenario. The aid bag should carry everything that is deemed necessary to sustain those casualties within that interval. It is also important to utilize the stock of supplies available through Individual First Aid Kits (IFAKs) carried by other Soldiers. Lifesaving and stop-gapping abilities from the aid bag should additionally complement the items carried on the Medic. They should be accessible quickly and incrementally as necessary.

Keep in mind the Tactical Combat Casualty Care (TCCC) principles and priorities when considering what to pack for the assault. The assault aid bag easily covers the Tactical Field Care phase of TCCC guidelines and best serves the Medic within that phase of care. When packing the assault aid bag consider the treatment priorities in what is packed based on the most significant threats. Recent studies find that the majority of Special Operations Forces (SOF) mortality comes from uncompressible hemorrhage, tension pneumothorax, airway obstruction, and sepsis, in that order.¹ This drives what the Medic carries on their body and what is packed in the assault aid bag, keeping in mind the amounts of supplies that are needed, and the access required (Figure 4).

Airway requirements in the assault aid bag can be packed for less speed than the equipment the Medic

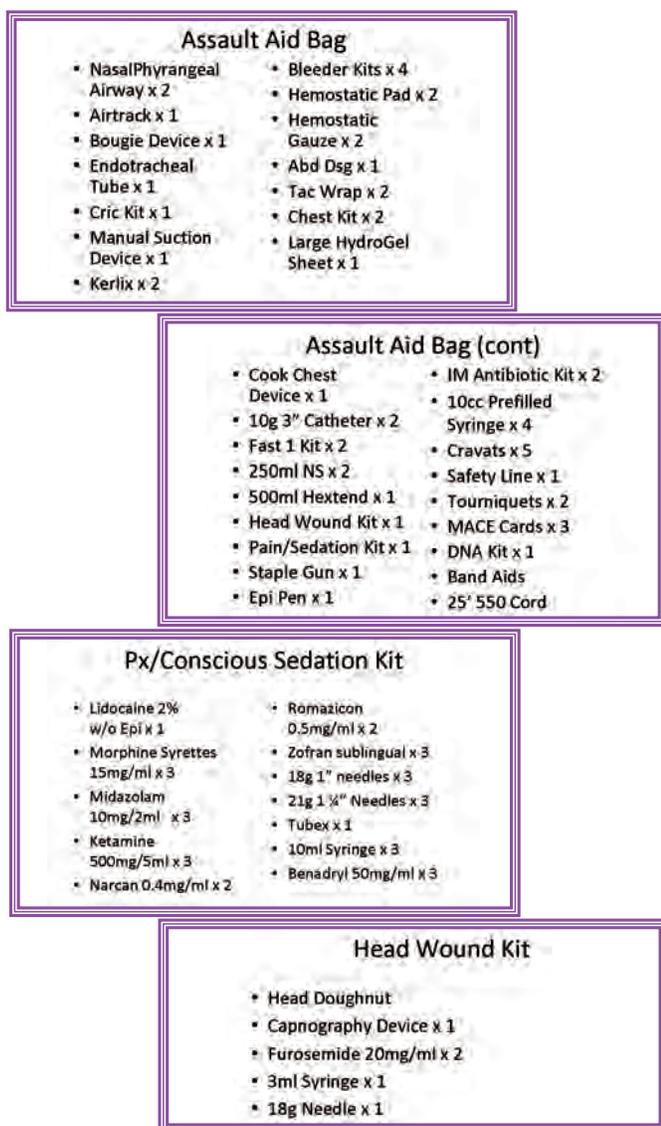


Figure 4: Possible inventory for an assault aid bag and inclusive procedure kits.

keeps on their body. It is important to have easy access emergency interventions such as a cricothyroidotomy kit. The assault aid bag can mirror that capability while also providing additional adjuncts such as an Airtrack® or an endotracheal tube introducer (AKA, a gum elastic bougie). Other options can include the King LT®, laryngeal mask airway (LMA), or the time honored laryngoscope and intubation kit. Suction may include devices such as the Squid Suction® or a basic 60cc syringe with a nasal pharyngeal airway (NPA) attached to provide some minimal capability. A bag-valve mask (BVM) may be carried here as well, but the argument can also be made that it can be sacrificed for mouth-to-tube ventilations by another Soldier until a BVM can arrive from the back-up aid bag. Exercising critical thought such as this provides additional room for more practical equipment when judging time requirements and use.

Breathing supplies should again be dependent on more urgent requirements but not so definitive that they could be deferred to the back-up aid bag. Chest kits noted in the first article should be carried in multiples here to provide identical and repetitive supplies for use or to throw to someone else for use. Precut Hydrogel® tape, Asherman (ACS)® dressings, or Hyfin® dressings may be used in chest kits as well as 3" 10-gauge needles for emergency needle decompression.² Larger (12" x 12") Hydrogel® sheets, which may be cut, folded, and packaged in a Ziplock® bag, should also be carried for treating those extra large "shark bite" wounds that often result from shrapnel events to the torso. (Figure 5). Other chest treatment devices such as the Cook Device® or the Uresil® Thoracic Vent may be included as well to provide additional capabilities as long as personnel are thoroughly trained and experienced with them.

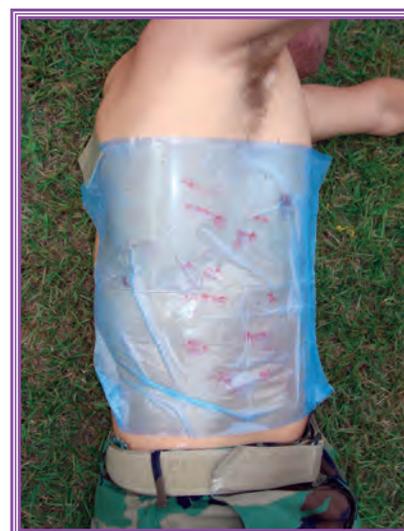


Figure 5: A large sheet of Hydrogel® or a single layer of Saran Wrap® can provide large area coverage as an occlusive or abdominal dressing.

Vital circulation considerations in this respect have to meet the dressing requirements of anatomy while still keeping in mind the hypotensive resuscitation theories that are presently in practice. Initial hemorrhage control comes from the IFAKs that each Soldier is outfitted with and from the layering of supplies. Tourniquets placed on body armor, and the extra supplies found in vehicle aid bags will normally provide all that is necessary to meet requirements. However, during situations where the Medic may not be able to access additional supplies, it is important to have some small quantity of packing materials and dressings inside the aid-bag to provide that extra confidence needed for treating hemorrhage.

Additional dressings and hemostatics should initially come from the wounded person's own supply. However, having additional hemostatic materials in the assault aid bag is essential to provide the confidence needed to confront the most significant contributor to mortality. The

next generation of hemostatics arrived recently and, whether they are styled in a pad, powder, or as packing, all are accepted in practice and considered essential for advanced hemorrhage control. Again, training with and gaining the essential experience and confidence to employ any hemostatic is essential to achieve their maximum effectiveness.

Head injuries provide more challenging wounds with a range of intangibles. Traumatic brain injury (TBI) can stem from multiple mechanisms of injury such as overpressure, high velocity or tertiary events from blast effects, or simple impact injuries occurring from a fall.³⁻⁴ Head kits should include the essential elements of the head injury protocol and again, they are prepared to provide all the essential supplies needed for treatment in a single bag. A small padded “head doughnut” made out of rolled Kerlix and taped circumferentially can provide an effective pressure device for the highly vascular skin of the head. It can also provide extra protection when laid around an open skull fracture, facilitating a more effective dressing for the difficult anatomy of a head wound. A diuretic such as mannitol or furosemide may also be given in the field as long as the protocols are fully vetted, and the Medic is trained by their surgeons and have a high level of confidence in a rapid evacuation.

The Military Acute Concussive Exam (MACE)⁵ is an excellent way to evaluate a head injury at the point of injury. Carrying at least three of these sheets laminated for use is a prudent precaution. This exam can be used to immediately evaluate the mental status of a patient that has a high index of suspicion for a head injury. The scoring method and ability to conduct serial exams with no special support requirements allows the Medic to make diagnostic decisions based on credible findings. This allows the Medic to make good recommendations on the status of Soldiers even if they initially appear uninjured post event. Those findings either allow the Medic to return them to the fight with high confidence, hold them to conduct serial testing off the original baseline evaluation, or triage and evacuate them for more thorough testing for a more conservative prognosis.

A large disposable skin stapler provides a convenient, fast, and efficient way to close any emergency surgical procedure such as a cricothyroidotomy, chest tube, or open abdomen. It additionally allows for fast and effective treatments of minorly injured noncombatants.

A padded roll of Saran Wrap® is another multifunctional tool that provides good care if used properly. The cellophane can cover badly burned areas or extremities in order to protect the burns, decrease pain, and provide some insulation against heat loss and painful nerve

stimulation. It can also serve as a means to close abdominal wounds and eviscerations, to supply a large size occlusive dressing alternative for the chest, or protect traumatically amputated extremities for transport. But remember to always apply cellophane loosely to casualties and never wrap circumferentially in consideration of late swelling complications.

A field expedient DNA kit is a simple and inexpensive solution to taking high value targets or multiple enemy fatalities off an objective. Although commercial varieties are numerous and expensive, most experts point out that the same results can be achieved with a simple kit of a few unlined business size envelopes and medical cotton tip applicators (CTAs). These items should be carried in a Ziploc® bag to protect them prior to use. Make sure to never return any collected samples back into a Ziploc® bag as it will immediately degrade them. If hair, body fluids, or blood is collected, they should be individually packaged in the envelopes and marked with a date time group, location, and associated pictures for further documentation. In the most stringent conditions, those items should then be maintained in a strict chain of custody log and witnesses if the importance of the target and the confidence of the evidence require it.

Carrying multiple cravats also provides another multifunctional tool with no space loss and with very little weight. Cravats can be used for improvised tourniquets, splints and rags, slings and swaths, and protecting large-size wounds such as an abdominal evisceration.

Multiple prefilled syringes of normal saline in 5cc or 10cc sizes provide quick and efficient methods of flush for medications in an intravenous (IV) or intraosseous (IO) site or for the reconstitution of parenteral antibiotics. Prepare the syringes by taping an 18-gauge hard needle to the body of each so that they can be used with admin sets that do not use Luer locks.

Other items commonly carried and employed from an assault aid bag can include a “Safety Line” made of a twenty-foot length of 1” diameter tubular nylon looped and secured by a retraced overhand knot. This safety line can be employed in many fashions such as an expedient rappelling harness, a drag line for casualties, or as a lift to extract personnel from a vehicle. It can also be used to lower someone out of a window or down off of a roof, or just to secure a patient to a litter or chair. Medics also can carry another one-foot loop of tubular nylon with a snap link in order to secure aid bags, equipment, or litters to an aircraft floor. Packing twenty-five feet of 550 parachute cord in your aid bag always provides the indispensable solution to some unforeseen need as well. It is also smart to carry a bar or tube of a favorite sports nutri-

tion supplement for those times when an extra boost of energy is needed, or just to sustain over a long operation. Never forget the inevitable requirement for simple and accessible Band-Aids®; a Medic without a Band-Aid® is like a commo man without a battery.

THE BACK-UP AID BAG

The theory behind the back-up bag is more than just a storage area for resource intensive items such as chest tube kits, unscreened blood transfusion kits, and hazardous materials kits. This bag covers the evacuation care phase of TCCC principles and should give the Medic the ability to handle approximately five patients or allow the sustainment of a single critical casualty for a prolonged period of time. The back-up aid bag should replicate most, if not all, capabilities the assault bag has plus bring extra capabilities to the mix by maintaining special equipment and supplies. The “two is one, one is none:” rule is crucial here when replicating hemostatics, airway management, and treatment of a tension pneumothorax with the assault aid bag. This puts a cap on basic needs and leaves room for advanced devices.



Figure 6: A few commercial options for a backup aid bag.

Some criteria useful in selecting the appropriate bag is its storage capacity and the way items lie out in it (Figure 6). In a multiple casualty situation, it is essential to be able to open the back-up bag so that the supplies and equipment are exposed to all first responders. First responders will be able to work around it, accessing items from any direction without having to dig for items or ask where they are. Airways, Kerlix®, ACE® wraps, hemostatics, chest kits, SAM® splints, and C-collars should be instantly identifiable and available once the bag is opened. Other critical elements appropriate for the back-up aid bag may be military anti-shock trousers (MAST), casualty monitoring devices, Kendrick traction splints,

and automatic ventilators presently available on the market. In keeping with a five-patient theme, extra medications, antibiotics, fluids, starter sets, and IO devices should fill up the rest of the bag (Figure 7). The pain and sedation kit in the back-up bag should be laid out exactly like the one in the primary bag so that if conducting a lengthy sedation while awaiting evacuation, the transition from one kit to another is smooth.

- Back Up Aid Bag**
- Bag Valve Mask x 1
 - Manual Suction Device x 1
 - Laryngoscope Kit x 1
 - Bougie Device x 1
 - Chest Kit x 2
 - Chest Tube Kit x 2
 - Large HydroGel Sheet x 1
 - Kerlix x 4
 - Bleeder Kit x 4
 - Abd Dsg x 1
 - Chest Dsg x 1
 - Hemostatics x 4
 - Tac Wrap x 2
 - Pain/Sedation Kit x 4
 - IM Antibiotic Kit x 4
 - SAM splints x 3

- Back Up Aid Bag (cont)**
- Hextend 500ml x 4
 - Saran Wrap x 1
 - 250ml NS x 2
 - Burn Dsg x 2
 - Head Wound Kit x 1
 - Staple Gun x 1
 - Stethoscope x 1
 - Sick Call Meds
 - Band Aids
 - Epi Pen x 1
 - Cravats x 5
 - C Collar x 1
 - Kendrick Device x 1
 - MAST Pants x 1
 - 3" Medical Tape x 2
 - Rehydration Powder/Salts

- **Chest Tube Kit**
 - Betadine Swab
 - Heimlich Valve
 - Chest Tube
 - #10 Scalpel
 - Large Curved Kelly Clamps
 - Suture Material
- **Unscreened Blood Transfusion Kit**
 - 15 gauge needle x 2
 - Citrate Collection bag x 2
 - Y-Connector with filter x 1
 - Prepared bag of NS x 1
 - 50mg Benadryl INJ x 1
 - Disposable tourniquet

Figure 7: Possible list of supplies and equipment for a back up aid bag in the direct action environment and procedure kits that can be carried.

One common theme among mass casualty situations is the need for lots of pain medications, and this is especially true when working with indigenous forces due to their greater number of troops. Layering pain medications throughout the assault force by way of individual narcotic packs and what is stored in the back-up bag should amount to enough to treat more than the assault force. At first glance, an individual kit containing two morphine auto-injectors, fentanyl lozenges, and antibiotics seems like overkill; but experience has shown that, even when they are all combined, this is only enough for the initial pain management in a MasCal. Delayed evacuation is a given in this situation, so ensuring an abundance of pain medications is entirely appropriate.

Consider toxic industrial chemicals (TICs) and toxic industrial materials (TIMs) as possible secondary exposure from an assault, especially in today's environment of home-made explosives (HMEs). These hazardous material (HazMat) threats can lead to smoke inhalation, organophosphate poisoning, chemical exposure, and contact irritants. Being able to determine the true source of a respiratory distress from a smoke irritant encountered in a burning house is doubtful, but it is important to carry the appropriate equipment and medicines to cover the largest number of reasonable threats. A bronchodilator such as albuterol and a respiratory steroid inhaler are simple stop-gap measures to treat inhalation injuries until evacuation to a CSH.

A stethoscope probably doesn't belong in an assault aid bag but it can be a useful tool in the back-up bag, especially if the pulse-ox isn't working well. A simple, yet accurate heart rate by stethoscope instead of guessing by palpation can guide treatments much more effectively, and it can also be an essential tool for determining death. In the future, advanced ultrasound devices may provide this capability in a more practical way without having to take off personal protective equipment (PPE) for use. Casualty cards are worth their weight in gold, especially in a MasCal event; so carrying an additional 15 cards is not a bad idea.

To avoid using up valuable space on fluids, consider distributing 250ml bags of normal saline to the assault force. When collected, this cache can provide up to four or five liters of supplies. Packing a few crystalloids and colloids also provides enough fluids to conduct limited resuscitation or to hang an unscreened emergency blood transfusion.

An outdated, but prevalent theme in packing an aid bag for direct action was that oral sick call medications are unnecessary. This is obviously a pre-war mentality. A simple but acute sickness can degrade warfighting ability and may even become a show stopper. Layering oral medications throughout all levels of your gear in either a small pill box that fits in a pocket or a small fishing lure box that fits into an aid bag is extremely resourceful, without taking up much room. When packing oral meds, consider acute threats that may be encountered and use pills manufactured small enough so that

there is enough to treat the whole assault force. Some essential medications may include Immodium, should there be an outbreak of diarrhea, Zyrtec and Motrin for allergy issues, and Mobic and acetaminophen for headache and back pain. A back spasm while boarding a helo for an infil can be a liability on the objective, so having a small quantity of non-narcotic oral pain meds can make a huge difference. A small bottle of nitroglycerin, aspirin, and morphine can mean a lot if anyone starts having chest pain on target. Some extra Avalox (moxifloxacin) to cover a MasCal situation can double as a traveler's diarrhea treatment for the force. This will also cover items needed when conducting long-duration missions for sustainment, which includes oral pain meds, oral rehydration salts, and enough PO antibiotics to cover casualties from other accompanying units.

The authors hope that this two part series may provide some insight and lessons learned, as well as an impetus to take preparation and theories of care to the next level in this environment. Medics must constantly use imagination and debate to ensure the highest level of care possible for our wounded is maintained.

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The authors are assigned as 18Ds to USASOC and have accumulated 43 months of deployed time in both OEF and OIF between them.