

# BURN MASS CASUALTY INCIDENT (BMCI) SURGE PLAN: Pediatric Annex



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## **Attachment 1: Pediatric Burn Mass Casualty Incident**

## **VERSION #6**





## Pediatric Burn Surge Attachment

During an incident it would be important to rapidly deploy pediatric medical expertise and supplies to any medical facility experiencing the influx of a large number of pediatric burn patients.

Such assistance will be provided in the form of Burn Surge Strike Teams equipped with a cache of airway and vascular access supplies suitable for pediatric patients. Five flight services around Michigan have agreed to transport these Burn Surge Strike Teams to the scene, the local medical facility or the nearest Burn Surge Facility (BSF) in support of the triage, treatment and transport of patients. Activation and dispatch of these Burn Surge Strike Teams will be done at the direction of the SBCC medical director in consultation with the Community Health Coordinating Center (CHECC). The strike teams will assist with initial stabilization, advanced airway management and intravenous (IV) and interosseous (IO) access for the pediatric patient. The configuration of the team will be dependent on the incident: it will include the pilot/driver and a flight nurse as well as one or more of the following:

- Additional flight nurse or paramedic
- Senior burn nurse
- Pediatric Critical Care Nurse
- Physician:
  - Flight Physician
  - Pediatric Emergency Medicine Senior Resident or Fellow
  - Senior Emergency Medicine Resident or Fellow
  - Senior Level Pediatric Surgical Resident or Fellow
  - Pediatric Critical Care Fellow

The purpose of this appendix is to provide guidance for the care of the pediatric patients injured in a Burn Multi Casualty Incident (BMCI). The goals of this plan are to:

- Provide highest level of care for a large number of pediatric burn patients
- Expand ability to provide burn care
- Prioritize use of limited resources
- Support Michigan healthcare facilities caring for a surge of pediatric burn patients.

This document outlines the plan and resources that have been developed to provide care for pediatric patients involved in a BMCI including:

- Initial resuscitation
- Fluid management
- Airway control
- Mechanical ventilation
- Pain control
- Wound assessment and management

The pediatric patient is more vulnerable to weather conditions and toxic exposures because they are shorter and therefore closer to the ground. Their motor skills and cognitive reasoning may put them in harm's way because they cannot fully comprehend the dangers and the need to escape from a situation. They may even gravitate towards the danger out of curiosity. They may become frightened of the first responders because of PPE gear as well as the fact that they are strangers. They may become separated from other family and will need assistance and supervision. They are also more vulnerable from a physiologic status:

#### Table # 1

| Pediatric Characteristic | Special risk during disaster                                       |
|--------------------------|--|
| Respiratory              | Higher minute volume increases risk from exposure to inhaled       |
|                          | agents.  |
| Gastrointestinal         | Higher risk for dehydration from vomiting and diarrhea after       |
|                          | exposure to contamination.   |
| Skin                     | Higher body surface area increases risk for skin exposure. Skin is |
|                          | thinner and more susceptible to injury from burns, chemicals and   |
|                          | absorbable toxins. Evaporation loss is higher when skin is wet or  |
|                          | cold, so hypothermia is more likely.                               |
| Endocrine                | Increased risk for thyroid cancer from radiation exposure.         |
| Thermoregulation         | Less able to cope with temperature problems, with higher risk for  |
|                          | hypothermia.   |
| Developmental            | Lower ability to escape environmental dangers or anticipate        |
|                          | hazards.   |
| Psychological            | Prolonged stress from critical events. Susceptible to separation   |
|                          | anxiety.   |

## **Basic Treatment Considerations**

Children have a greater surface area per unit of body multi than adults and require relatively greater amounts of resuscitation fluid. Children have a higher percentage of Body Surface Area (BSA) devoted to the head relative to the lower extremities.

- The ratio of BSA: is highest at birth and diminishes as the child grows.
- The large head also contributes to larger heat loss.
- Pediatric skin is thinner and more permeable; toxins, if present will be absorbed faster and exert greater systemic effects.
- Smaller children have limited glycogen stores which can be rapidly depleted under stress; they should receive a maintenance fluid of D5LR, in addition to resuscitation fluids. (Refer to page 11 of *Pediatric BMCI Surge Appendix*)

#### Vital Signs at Various Ages

#### Table # 2

| Age       | Heart Rate (beats/min) | Blood Pressure (mm Hg) | Respiratory Rate (breaths/min) |
|-----------|------------------------|------------------------|--------------------------------|
| Premature | 120-170                | 55-75/35-45            | 40-70                          |
| 0-3 mo.   | 100-150                | 65-85/45-55            | 35-55                          |
| 3-6 mo.   | 90-120                 | 70-90/50-65            | 30-45                          |
| 6-12 mo.  | 80-120                 | 80-100/55-65           | 25-40                          |
| 1-3 yr.   | 70-110                 | 90-105/55-70           | 20-30                          |
| 3-6 yr.   | 65-110                 | 95-110/60-75           | 20-25                          |
| 6-12 yr.  | 60-95                  | 100-120/60/75          | 14/22                          |

#### \*\*\*It is important to keep the patient NPO until assessment has been completed\*\*\*

## **Special Airway Considerations for the Pediatric Patient**

### AIRWAY

Anatomical differences to be aware of:

- The tongue is relatively large compared with the oropharynx, which may create an obstruction
- The larynx is higher and more anterior in the neck, the vocal cords are at a more anterocaudal angle
- The epiglottis is omega shaped and soft
- The narrowest portion of the airway is the cricoid ring, not the vocal cords
- Significant burns to the nasal passage of infants < 6 months can cause airway compromise due to obligatory nose breathing

#### Intubation

Emergently intubate:

- Burns to mouth and/or nose
- Stridor, wheezing, respiratory distress, hypoxia
- Altered mental status with inability to protect airway

Urgent evaluation of airway:

- Carbonaceous sputum
- Facial burns
- Cough with distress, stridor or hypoxia
- Prolonged closed space heat exposures
- Large burns >20%

Early intubation, if airway control is needed, is vital to prevent a future difficult intubation scenario.

- Keep Patient NPO
- Administer 100% Oxygen
- Elevate HOB
- Appropriate size Endo-Tracheal Tube (ETT)
- Appropriate securing device
  - Commercial device
  - Tape/Twill tape/Trach ties
- Naso-Gastric Tube (NGT)/Oral Gastric Tube (OGT) inserted

The following table can be used for reference and to assist with the induction for intubation.

| Table # 3       |                 |                    |  |
|-----------------|-----------------|--------------------|--|
| Agent           | Dosage          | Duration of Action | Comment                                  |
| Induction       |                 |                    |  |
| Etomidate       | 0.2 – 0.4 mg/kg | 10-15 minutes      | Rapid onset 30-60 sec, peaks in 1 minute |
| Versed          | 0.1 -0.2 mg/kg  | 30-60 minutes      |  |
| Fentanyl        | 1 – 5 mcg/kg    | 1-2 hours          |  |
| Paralytics      |                 |                    |  |
| Rocuronium      | 1mg/kg          | 30 – 60 minutes    | Rapid onset                              |
| Succinylcholine | 1 – 2 mg/kg     | 3 - 5 minutes      | If < 24 hours since injury               |
| Vecuronium      | 0.1 mg/kg       | 30-90 minutes      |  |

## **Rapid Sequence Intubation Agents**

The following tables can be used for reference to assist with appropriate equipment and tube sizes.

\*\*Cuffed endotracheal tubes should be used if available

## **Equipment and Supplies**

#### Equipment Sizes: Up to 20Kg

Tables # 4

| Weight     | 3 kg       | 5 kg       | 10 kg      | 15 kg      | 20 kg         |
|------------|------------|------------|------------|------------|---------------|
| ETT        | 3-3.5      | 3.5-4.0    | 4-4.5      | 4.5-5.0    | 5.0-5.5       |
| L Blade    | Miller 0-1 | Miller 0-1 | Miller 0-1 | Miller 1-2 | Miller 2      |
| Suction    | 6-8 Fr     | 8-10 Fr    | 10 Fr      | 10 Fr      | 10 Fr         |
| NG Tube    | 5-8 Fr     | 5-8 Fr     | 8-10 Fr    | 10-12 Fr   | 12-14 Fr      |
| Foley      | 6-8 Fr     | 6-8 Fr     | 8-10 Fr    | 10-12 Fr   | 10-12 Fr      |
| Chest Tube | 10-12 Fr   | 12-16 Fr   | 16-20 Fr   | 20-24 Fr   | 24-32 Fr      |
| LMA (cuff) | 1 (4 mL)   | 1.5 (7 mL) | 2 (10 mL)  | 2 (10 mL)  | 2-2.5 (14 mL) |

### Equipment Sizes: greater than 20kg

Table # 5

| Weight     | 20 -25 kg    | 30 kg        | 40 kg        | > 50 kg        |
|------------|--------------|--------------|--------------|----------------|
| ETT        | 5.5-6.0 cuff | 6.0-6.5 cuff | 7.0-7.5 cuff | 7.5-8.0 cuff   |
| L Blade    | Mil/Mac 2    | Mil/Mac 2-3  | Mil/Mac 3    | Mil/Mac 3      |
| Suction    | 10 Fr        | 10 Fr        | 12 Fr        | 12-14 Fr       |
| NG Tube    | 12-14 Fr     | 14-26 Fr     | 14-16 Fr     | 16-18 Fr       |
| Foley      | 12 Fr        | 12 Fr        | 12-14 Fr     | 12-14 Fr       |
| Chest Tube | 28-32 Fr     | 28-32 Fr     | 32-40 Fr     | 32-40 Fr       |
| LMA (cuff) | 2.5 (17 mL)  | 3 (20 mL)    | 3 (20 mL)    | 4-6 (30-50 mL) |

## Ventilator Management

Pediatric patients have smaller and more delicate lungs that are susceptible to barotrauma. Children have a unique respiratory physiology; they have higher minute ventilation per kg than adults. Because they have a higher respiratory rate than adults they are exposed to greater dosages of toxins that may be present during a BMCI and will suffer the effects of these agents much more rapidly than adults. They also will potentially absorb more of the substance before it is cleared or diffused from the respiratory tissues. Many chemical agents have a high vapor density and are heavier than air, which means that they "settle" close to the ground, in the air space used by children.

#### Initial Ventilator Settings Table # 6

|                  | <10 kg           | 10-40 kg         | >40 kg           |
|------------------|------------------|------------------|------------------|
| Mode             | Pressure Control | Pressure Control | Pressure Control |
| Rate             | 40               | 28               | 16               |
| PIP              | 15-20 cm H2O     | 15-20            | 20               |
| PEEP             | 5-8 cm H2O       | 5-8              | 5-8              |
| FiO2             | 100%             | 100%             | 100%             |
| Inspiratory time | 0.3 seconds      | 0.7 seconds      | 1 second         |

Inspiratory pressure may be increased **slowly** to get good chest rise and equal breath sounds. Too much pressure could cause a pneumothorax, which is why pressures are increased slowly for equal chest rise.

- Effective ventilator changes for:
  - Poor Oxygenation: increase FiO2, increase PIP
  - High CO2: increase rate, increase PEEP
    (Make changes separately to identify which change improved ventilation or oxygenation).
- Burn patients undergoing fluid resuscitation typically require higher ventilator pressures.
- For patients with circumferential burns of the torso/abdomen escalating ventilator pressures may indicate the need for escharotomies.

## \*\*\*If considering escharotomy contact the SBCC\*\*\* 734-936-2876

## Sedation:

Ongoing sedation for care while waiting for and during transport should be considered. Does the patient need to be restrained? Consider the use of arm immobilizer as well as soft restraints, whichever method is presently used by the transport teams.

| Agent         | Age                     | Dosage                | Max Doses                         |
|---------------|-------------------------|-----------------------|-----------------------------------|
| Versed        | GA <u>&lt;</u> 32 weeks | 0.03 mg/kg/hr.        | 0.06mg/kg/hr.                     |
|               | > 32 weeks              | 0.06 mg/kg/hr.        | 0.12mg/kg/hr.                     |
| Loading dose  | 1 month – 18 yrs.       | 0.05 – 0.2 mg/kg      | Given slow IV over 2-3 minutes    |
| Continuous IV |                         | 0.06 – 0.12 mg/kg/hr. | 0.36 mg/kg/hr.; titrate to effect |
| Morphine      | < 50kg                  | 0.01 mg/kg/hr.        | 0.04 mg/kg/hr.                    |
|               | <u>&gt;</u> 50 kg       | 1.5 mg/hr.            |                                   |
| Fentanyl      | < 50 kg                 | Load: 1 – 10 mcg/kg   | 1 - 10 mcg/kg hr.                 |
|               |                         | <5 mcg/kg 3-5 minutes |                                   |
|               |                         | >5mcg/kg 5-10 minutes |                                   |

#### Table # 7

## **Burn Assessment**

Assessing the patient's burns and estimating the area involved is important for the resuscitation phase of care. This can be done in several ways. Two methods are the palm method and the Lund-Browder chart. It is important to note that only partial and full thickness burns are to be included in the Total Body Surface Area (TBSA) estimation.

**The Palm Method** - Is an extremely easy and is very helpful when the burns are scattered over the body. With this method and using the PATIENT'S hand as a guide, the palmar surface is equal to 1% of the patient's body.

#### Diagram # 1

**The Palm Method** 



**Lund and Browder Chart** - If used correctly, is the most accurate method for determining TBSA burns in pediatrics. It compensates for the variation in body shape with age and therefore can give an accurate assessment of burns area in children.



#### Diagram # 2

**Lund-Browder Chart** 

## Fluid Resuscitation

Pediatric patients can compensate and maintain their heart rate during the early phases of hypovolemic shock, which can mislead the practitioner into under-resuscitating the patient. Then the patient will crash without warning. Vital signs, including heart rate, respiratory rate and blood pressure vary with age. Temperature regulation is harder for the child related to the thinner skin, body surface area to multi ration and the usual lack of subcutaneous tissue. This is why it is so important to keep the child warm, especially during the resuscitation phase.

If IV access cannot be obtained, intraosseous (IO) access should be used.

- 1. <u>Initial starting points</u> for fluid resuscitation for pediatric patients (rate to be adjusted once TBSA is calculated)
  - a. < 5years: 125 ml Lactated Ringers (LR) per hour
  - b. 6-13 years old: 250 ml LR per hour
  - c.  $\geq$  14 years: 500 ml LR per hour
- Pediatric patients with burns <a> 15% TBSA require resuscitative fluids in addition to maintenance fluids. (see Table for exemplar Calculations)</a>
  - a. 4ml Lactated Ringers x Kg x TBSA (only partial and full thickness burns) is the estimated resuscitation fluid requirement for the first 24 hours.
  - b. For patients under 1 year of age give Dextrose 5% Lactated Ringers (D5LR) at a maintenance rate in addition to the fluid resuscitation.
  - c. Divide total by 2 and administer this amount in the first 8 hours from the time of injury. The remaining half to be given over the next 16 hours.
  - d. If the patient remains in a BSF after fluid resuscitation has been completed, run maintenance IV fluids until adequate PO intake is maintained.
- 3. Urine Output target is 1-2 ml/kg/hr. (Adjusting rate of resuscitation fluid in response)
  - a. Low urine output for two (2) consecutive hours:
    - i. Patient is less than or equal to 30 kg: urine output is < 1 mL/kg/hr. or Patient is greater than 30 kg: urine output is < 0.5 mL/kg/hr.
      - 1. Increase fluid rate by 15%
      - 2. Notify physician
      - 3. Repeat x 1 if urine output remains low
    - ii. If urine output remains inadequate after two (2) 15% escalations start Albumin infusion if not already done
    - iii. If urine output remains low x two (2) consecutive hours after Albumin infusion started, notify attending physician or fellow
    - iv. Start dopamine drip
  - b. High urine output for two (2) consecutive hours
    - i. Patient is < 30 kg: urine output > 2 mL/kg/hr.
    - ii. Patient is > 30 kg: urine output is > 1 mL/kg/hr.

## 1. Dip urine to exclude glycosuria.

### Table # 8

| E                 | Exemplar Burn Resuscitation Fluid Calculations |             |   |  |
|-------------------|--|-------------|---|--|
| Patient<br>Weight | TBSA<br>burn                                   | Calculation | Estimated 24h Resuscitation Total<br>(NOT including maintenance fluids) | Fluid type<br>(dependent on<br>patient weight) |
| 8 kg              | 20%  | 3 x 8 x 20  | 480 ml  | D5 LR  |
| 8 kg              | 40%  | 3 x 8 x 40  | 960 ml  | D5 LR  |
| 8 kg              | 60%  | 3 x 8 x 60  | 1,440 ml  | D5 LR  |
| 8 kg              | 80%  | 3 x 8 x 80  | 1,920 ml  | D5 LR  |
| 10 kg             | 20%  | 3 x 10 x 20 | 600 ml  | LR   |
| 10 kg             | 40%  | 3 x 10 x 40 | 1,200 ml  | LR   |
| 10 kg             | 60%  | 3 x 10 x 60 | 1,800 ml  | LR   |
| 10 kg             | 80%  | 3 x 10 x 80 | 2,400 ml  | LR   |
| 20 kg             | 20%  | 3 x 20 x 20 | 1,200 ml  | LR   |
| 20 kg             | 40%  | 3 x 20 x 40 | 2,400 ml  | LR   |
| 20 kg             | 60%  | 3 x 20 x 60 | 3,600 ml  | LR   |
| 20 kg             | 80%  | 3 x 20 x 80 | 4,800 ml  | LR   |
| 30 kg             | 20%  | 3 x 30 x 20 | 1,800 ml  | LR   |
| 30 kg             | 40%  | 3 x 30 x 40 | 3,600 ml  | LR   |
| 30 kg             | 60%  | 3 x 30 x 60 | 5 <i>,</i> 400 ml   | LR   |
| 30 kg             | 80%  | 3 x 30 x 80 | 7,200 ml  | LR   |
| 40 kg             | 20%  | 3 x 40 x 20 | 2,400 ml  | LR   |
| 40 kg             | 40%  | 3 x 40 x 40 | 4,800 ml  | LR   |
| 40 kg             | 60%  | 3 x 40 x 60 | 7,200 ml  | LR   |
| 40 kg             | 80%  | 3 x 40 x 80 | 9,600 ml  | LR   |
| 50 kg             | 20%  | 3 x 50 x 20 | 3,000 ml  | LR   |
| 50 kg             | 40%  | 3 x 50 x 40 | 6,000 ml  | LR   |
| 50 kg             | 60%  | 3 x 50 x 60 | 9,000 ml  | LR   |
| 50 kg             | 80%  | 3 x 50 x 80 | 12,000 ml   | LR   |

## \*\*\* Give HALF(1/2) of the estimated 24 hour resuscitation fluid total OVER THE FIRST 8 HOURS post-injury, in addition to maintenance fluids\*\*\*

## **Clinical Features of Dehydration**

#### Table # 9

| Feature           | Mild (<5%)       | Moderate (5% to 10%)         | Severe (<10%)              |
|-------------------|------------------|------------------------------|----------------------------|
| Heart rate        | Normal           | Slightly increased           | Rapid, weak                |
| Systolic BP       | Normal           | Normal to orthostatic, >10   | Hypotension                |
|                   |                  | mmHg change                  |                            |
| Urine output      | Decreased        | Moderately decreased         | Marked decrease, anuria    |
| Mucous            | Slightly dry     | Very dry                     | Parched                    |
| membranes         |                  |                              |                            |
| Anterior fontanel | Normal           | Normal to sunken             | Sunken                     |
| Tears             | Present          | Decreased, eyes sunken       | Absent, eyes sunken        |
| Skin              | Normal turgor    | Decreased turgor             | Tenting                    |
| Skin perfusion    | Normal capillary | Capillary refill slowed (2-4 | Capillary refill markedly  |
|                   | refill (<2       | seconds); skin cool to       | delayed (>4 seconds); skin |
|                   | seconds)         | touch                        | cool, mottled, gray        |

### PAIN MANAGEMENT

The patient should only be given medication through IV access or IO access when available. (Oral or IM route can have a variable absorption rate).

- Fentanyl 0.5 1 mcg/kg/dose Every 5 minutes with a Max of 2 mcg/kg/hour OR
- Morphine 0.05 0.1 mg/kg dose. May repeat to 0.2 mg/kg/hr. max dose.
- Oral pain medication should be reserved either for patients with very minor burns or patients with no other options for pain control.

Diagram # 3



### Non-Verbal Pain Assessment Tool

\*\*This is a behavioral pain assessment scale for use in non-verbal patients unable to provide reports of pain. Instructions: Rate patient in each category, add together document total pain score.

| FLACC SCALE   |                          |                         |                          |
|---------------|--------------------------|-------------------------|--------------------------|
|               | (FACE, LEGS, ACTIV       | ITY, CRY, CONSOLABILITY | ()                       |
|               | 0                        | 1                       | 2                        |
| FACE          | No particular expression | Occasional grimace or   | Frequent to constant     |
|               | or smile                 | frown, withdrawn,       | frown, clenched jaw,     |
|               |                          | disinterested           | quivering chin           |
| LEGS          | Normal position          | Uneasy, Restless,       | Kicking                  |
|               | OR                       | Tense                   | Or                       |
|               | Relaxed                  |                         | Legs drawn up            |
| ACTIVITY      | Lying quietly            | Squirming, Shifting     | Arched, Rigid or Jerking |
|               | Normal position          | back and forth, Tense   |                          |
|               | Moves easily             |                         |                          |
| CRY           | No cry                   | Moans or Whimpers       | Crying Steadily,         |
|               | (Awake or Asleep)        | Occasional complaint    | Screams or Sobs,         |
|               |                          |                         | Frequent complaints      |
| CONSOLABILITY | Content                  | Reassured by            | Difficult to console or  |
|               | Relaxed                  | occasional touching,    | comfort                  |
|               |                          | hugging or talking,     |                          |
|               |                          | Distractible            |                          |

#### Table # 10

## \*\*\* It is important to keep the patient NPO (nothing by mouth) until assessments have been completed\*\*\*

#### **NUTRITION**

Nutrition in a pediatric patient should be considered early in the treatment phase. Place enteral feeding tube as early as possible in all patients with burns  $\geq$  20% TBSA. If none are available or if the patient is awake and alert and able to drink and eat encourage patient to do so.

#### Diagram #4



- If patient has an NG/OG, check residuals Q 4 hr. If residuals are more than 3 times the hourly rate stop the tube feedings and notify physician
- Consult dietitian for appropriate formula

### Table # 12

### Nutritional Guidelines for Birth to 1 yr. old

| Age             |  |
|-----------------|--|
| Birth - 1 month | 2-3 ounces (6-90 mL) per feeding breast or bottle every 2-3  |
|                 | hours  |
| 2-4 months      | 3-4 ounces (90-120 mL) per feeding every 3-4 hours           |
| 4-6 months      | 4-5 ounces (120-150 mL) per feeding, four or more time daily |
|                 | Begins baby food, usually rice cereal                        |
| 6-8 months      | 6-8 ounces (180-240 mL) per feeding, four times daily        |
|                 | Eats baby food such as rice cereal, fruits and vegetables    |
| 8-10 months     | 6 ounces (180 mL) per feeding, four times a day              |
|                 | Soft finger foods  |
| 10-12 months    | 6-8 ounces (180-240mL) per feeding, four times a day         |
|                 | Soft table foods, uses spoon and cup with lid                |
| Formulas        | Milk Based: Enfamil, Enfacare & Similac                      |
|                 | Soy Based: Prosobee & Isomil                                 |

## **Communication Activation Model**



Gathering incident specific information is critical to communication both vertically and horizontally with the agencies involved. For communication with the Pediatric Burn Surge Strike Team deployed to assist with pediatric patients, the SBCC will ask the Healthcare/Burn Surge Facility for Elements of Essential Information (EEI) (*Appendix B – The Michigan State Multi-Casualty Incident Burn Plan*). This will provide the Pediatric Burn Surge Strike Team with basic information regarding patient quantity and injuries. All air ambulance services have 800 MHz radios and OPHP 1 is the fallback frequency. Direct phone communications will also occur.

## Diagram # 6 On-going Communication Incident



Special Event frequencies for the 800 MHz radios will be determined and provided by the CHECC. All air ambulance services have Special Event frequencies.



With the activation of the SBCC, the Medical Director will contact Survival Flight dispatch. They in turn will notify the closest air ambulance service and put them on stand-by. The closest air service will be dispatched to the impacted hospital or burn surge facility to assist with stabilization of patients, transport of Burn Surge Strike Team members and then begin the transfer of the most critical patients to burn centers. Critical pediatric patients will be the first transferred out. Other air ambulance services could be activated to assist in the transfer of the most critical to burn centers.

All air ambulance services would be notified of the burn mass casualty incident for situational awareness. The next closest air ambulance would be placed on stand-by for dispatch to assist with patient transport. Close communication would need to take place between survival dispatch and the air ambulances in the air and landing. Outside landing zones may have to be set-up by trained local personnel for safety of the flight crews.

## **References**

Pediatric Disaster CBRNE Incidents - Quick Medical Reference Guide. Developed by Region 2 South Healthcare Coalition in conjunction with the Michigan Department of Community Health (MDCH) Office of Public Health Preparedness (OPHP) utilizing the Department of Health and Human Services (HHS), Office of the Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program Cooperative Agreement Number U3REPO90218-01-00 funding.

University of Michigan – Department of Pharmacy Services; IV Guidelines for Brandon Newborn ICU:

http://med.umich.edu/surgery/burn/BrandonIVDripGuide.pdf

University of Michigan – Department of Pharmacy Services; PICU IV Guidelines <a href="http://med.umich.edu/surgery/burn/PICU\_IV\_InfusionChart.pdf">http://med.umich.edu/surgery/burn/PICU\_IV\_InfusionChart.pdf</a>

## Annex 1: Peds GO-KIT Supply List

#### Version 6

| Item   | Each  |
|--|---|
| Broselow tape  | 1   |
| Resuscitation  |   |
| Foleys   |   |
| 6 Fr.  | 4   |
| 8 Fr.  | 4   |
| 10 Fr.   | 4   |
| OG/NGT tubes   |   |
| 6 Fr.  | 4   |
| 8 Fr.  | 4   |
| 10 Fr.   | 4   |
| IV catheters   |   |
| 24 ga.   | 20  |
| 22 ga.   | 20  |
| 1 in. silk tape  | 4   |
| Tegaderm 2 3/8 x 2 3/4"  | 20  |
| Intra-Osseseous EZ-IO  |   |
| Sets: 15 ga. x 15 mm   | 10  |
| 15 ga. x 25 mm   | 15  |
| 15 ga. x 45 mm   | 5   |
| Driver for EZ-IO   | 1   |
| Airway   |   |
| 2.5 uncuffed ETT   | 4   |
| 3.0 uncuffed ETT   | 4   |
| 3.5 cuffed ETT   | 1   |
|  | 4   |
| 4.0 cutted ETT   | 4   |
| 4.0 cuffed ETT<br>4.5 cuffed ETT   | 4<br>4<br>4   |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT   | 4<br>4<br>4<br>4  |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT   | 4<br>4<br>4<br>4<br>4<br>4  |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT   | 4<br>4<br>4<br>4<br>4<br>4<br>4   |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT   | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4  |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT   | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4  |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.5 cuffed ETT   | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4                                   |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.5 cuffed ETT<br>8.0 cuffed ETT   | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4                         |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.5 cuffed ETT<br>8.0 cuffed ETT<br>6 Fr. Stylet   | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>7                              |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.5 cuffed ETT<br>8.0 cuffed ETT<br>6 Fr. Stylet<br>10 Fr. Stylet  | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>7<br>5                         |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.5 cuffed ETT<br>8.0 cuffed ETT<br>6 Fr. Stylet<br>10 Fr. Stylet<br>Capnometers: < 15 kg  | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>7<br>5<br>12                        |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.5 cuffed ETT<br>8.0 cuffed ETT<br>6 Fr. Stylet<br>10 Fr. Stylet<br>Capnometers: < 15 kg<br>>15 kg                                  | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>7<br>5<br>5<br>12<br>12   |
| 4.0 cuffed ETT<br>4.5 cuffed ETT<br>5.0 cuffed ETT<br>5.5 cuffed ETT<br>6.0 cuffed ETT<br>6.5 cuffed ETT<br>7.0 cuffed ETT<br>7.0 cuffed ETT<br>8.0 cuffed ETT<br>8.0 cuffed ETT<br>6 Fr. Stylet<br>10 Fr. Stylet<br>Capnometers: < 15 kg<br>>15 kg<br>Peep Valves | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>7<br>5<br>12<br>12<br>12<br>12 |

| 19 April, 2018                |      |
|-------------------------------|------|
| Item                          | Each |
| Adult Ambu bag                | 1    |
| Pediatric Ambu bag            |      |
|                               |      |
| Pediatric Cric tray (3.5)     | 1    |
| Neo trach (3.5) uncuffed      | 2    |
| Peds cric tray                | 1    |
| Peds trach (4) uncuffed       | 2    |
| Introducer, perc trach        | 1    |
| Resuscitation Masks           |      |
| Size 1 – neonatal             | 6    |
| Size 2 – infant               | 6    |
| Size 3 – toddler              | 6    |
| Size 4 – child                | 6    |
| Size 5 – small adult          | 6    |
| Non-rebreather mask – peds    | 10   |
| Twill tape/tie                | 1    |
| Nasal Cannula                 |      |
| Infant                        | 10   |
| Pediatric                     | 10   |
| Suction Catheters             |      |
| 6 Fr.                         | 10   |
| 8 Fr.                         | 10   |
| Laryngoscopes                 |      |
| Laryngoscope handle – Med.    | 1    |
| 0 Miller blade                | 4    |
| 1 Miller blade                | 4    |
| 2 Miller blade                | 4    |
| 3 Miller blade                | 4    |
| 4 Miller blade                | 4    |
| 1 Macintosh blade             | 4    |
| 2 Macintosh blade             | 4    |
| 3 Macintosh blade             | 4    |
| 4 Macintosh blade             | 4    |
| GlideScope Ranger             |      |
| GlideScope Ranger: Baton 3-4  | 1    |
| Includes 10 each 3 & 4 blades |      |
| GlideScope Ranger: Baton 1-2  | 1    |
| Includes 10 each 1 & 2 blades |      |
|                               |      |

## Annex 2: Acronyms

| Acronym                       | Term   |
|-------------------------------|--|
| BMCI                          | Burn Mass Casualty Incident                    |
| BETP                          | Bureau of EMS, Trauma, and Preparedness        |
| BSA                           | Body Surface Area                              |
| BSF                           | Burn Surge Facility                            |
| CHECC                         | Community Health Emergency Coordination Center |
| CO <sub>2</sub>               | Carbon dioxide                                 |
| Cric                          | Cricothyrotmy                                  |
| D5LR                          | Dextrose 5% Lactated Ringers                   |
| ETT                           | Endotracheal tube                              |
| F <sub>i</sub> O <sub>2</sub> | Fracture inspired oxygen                       |
| Fr.                           | French   |
| ga.                           | gauge  |
| GA                            | Gestational age                                |
| hr.                           | hour   |
| 10                            | intraosseous                                   |
| IVF                           | Intravenous fluid                              |
| IV                            | intravenous                                    |
| kg                            | Kilograms                                      |
| LR                            | Lactated Ringers                               |
| mcg                           | micrograms                                     |
| mg                            | milligrams                                     |
| mL                            | milliliter                                     |
| mm                            | millimeter                                     |
| NPO                           | Nothing per mouth                              |
| PEEP                          | Positive end expiratory pressure               |
| PERC                          | Percutaneous                                   |
| PIP                           | Peak inspiratory pressure                      |
| PO                            | per mouth                                      |
| SBCC                          | State Burn Coordinating Center                 |
| TBSA                          | Total body surface area                        |
| trach                         | Tracheostomy tube                              |
| yr.                           | years  |

## **Acknowledgements**

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