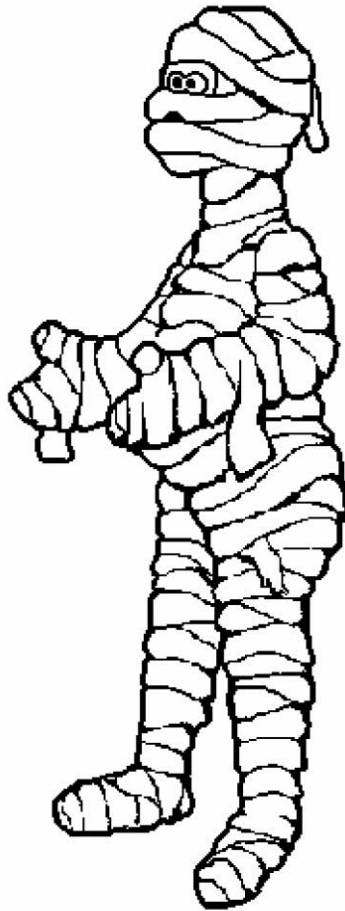


CASUALTY SIMULATION:

REALISM IN TRAINING THROUGH MOULAGE



Sixth Edition, 2005

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SPECIAL RECOGNITION

This is the sixth edition of this manual on "Casualty Simulation: Realism in Training through Moulage". Over the past 33 years, I have had the unique opportunity to have participated in several large scale training exercises as well as multiple BTLS, EMT and Paramedic final practical exams. These opportunities deepened my desire to bring the techniques of moulage to the printed page so that others might learn this valuable skill. This goal was reached in 1986 with the first edition of this manual. My hope is that it helps other instructors to enhance their students learning experiences and knowledge in providing effective emergency medical care in the pre-hospital setting.

I would like to acknowledge the continued support and encouragement of several individuals, shown me through the years as I practiced my "moulage magic".

The late Russell L. Lowry, Jr., Emergency Services Coordinator for James City County, a terrific boss who always enjoyed getting his hands "dirty" with me.

HMC Sandra Gurnik, USN, former ATLS instructor at the Uniformed Services University of the Health Sciences, Bethesda, MD who served as my initial mentor during my preceptor-ship in Moulage.

Marge Dolan, of Image Perspectives, who enhanced my abilities as a "moulage artist" through her innovative techniques which enable the injury to retain its' realistic appearance and stand up to the repeated manipulations in a training environment.

Captain A.G. Pollard, NC, USNR, my former Commanding Officer or "Skipper" who spearheaded the large scale "RESPONSE" exercises where casualty simulation took on a new meaning for the hundreds of naval reservists who serve in the medical units throughout the Norfolk, VA area.

To my children, Amber and Nathan, who willingly gave up their dad on drill weekends and during the week when I had to "make-up" some casualties for a drill or a class. As they grew older, they would sometimes join me in preparing the victims.

Finally, to my wife, Lorraine, who has indulged my many faults and shortcomings through the years when I had to teach a moulage class or practice my "madness" on casualties for just one more drill. Her love and support is what makes my life truly worthwhile.

INTRODUCTION: CASUALTY SIMULATION

If you have been involved in EMS for any length of time, then you should have been involved in at least one "Disaster Drill". Depending on the amount of time spent in preparing the 'victims', you may have felt that the drill itself was a real disaster. Consider arriving on the scene to find a 'victim' who is supposed to have major traumatic injuries, a decreasing level of consciousness and in shock but is lying there on the ground 'the picture of perfect health, laughing and wearing a tag which describes their injuries'.



What would be your reaction?

Disgust! Anger! Disappointment!

Of course, and rightly so. You were trained to treat injuries, which you can "see, feel or smell." Why should a drill be any different? Realism in teaching the fundamentals are necessary if the instructor wants to trigger the desired response. Only through planned realistic exercises can EMS personnel be conditioned to function in an emergency situation.

Casualty simulation is an essential part of these training exercises. That is the purpose of this manual on Casualty Simulation; to aid you in becoming adept at creating an effective illusion to aid in that realistic training experience.

DEFINITION:

According to Webster's dictionary, Moulage is defined as the science or practice of making a mold in some plastic substance. For the purposes of this course, moulage can be defined as the art of casualty simulation. Moulage is considered an art because it takes imagination and creativity to produce a simulated casualty. Moulage is accomplished by wound simulation through the use of make-up and clay (or wax) or make-up and prefabricated devices.

LANGUAGE AND TOOLS OF THE TRADE:

The items listed below, when combined, will give you the components of a basic moulage kit.

Adhesive: a sticky substance used to hold the moulage device or modeling substance in place. (spirit gum, tincture of benzoin, liquid latex)

Blood powder: a commercial product which, when mixed with liquid (water, liquid starch, glycerin, etc), simulates human blood.

*****CAUTION***** Blood mixtures will stain hair and clothing.

DO NOT GET NEAR EYES.

Brushes: artist type can be used for application of grease paints or powder

Charcoal powder: for use in the moulage of burns

Cold Cream: a commercial product used to protect the skin under make-up and an aid in the removal of makeup.

Combs: used in creation of special effects

Cotton: for make-up application and removal; special effects

Cotton tipped applicators: for make-up application

Effects Gel: a gelatin-based product (Ben Nye) that is solid when cold but become liquid when warm; reusable. Comes in three colors: *Scar, Flesh, Blood*

Effects Gel Applicator: equipment that applies the effect gel

Effects Wheel: a commercial Ben Nye product which includes several colors in one container

Facial masque: used in creation of special effects, 3rd degree burns

Foreign bodies of impaled objects/open fractures: used in creation of special effects (bone fragments, sticks, pieces of wood, pieces of metal, knife handle, shell fragments, plexiglass, etc.)

Glycerin: a colorless syrupy liquid used in many lotions as a base. In moulage work, the glycerin is used alone or mixed with various substances for a variety of effects.

K-Y Jelly or Vaseline: used in creating blisters for burns. (Vaseline is also used in the formula for making moulage wax)

Palette knife: a thin blade, blunt edged flexible instrument with a metal blade and wooden handle. Used when working with a modeling substance and for blending theatrical make-up.

Modeling substance: any material (in a variety of flesh tones) that can be molded or shaped to simulate human skin and tissue when creating artificial injuries.

- modeling clay
- plastalene
- morticians wax
- derma-wax

Sponges: for use in applying and blending make-up
stippling sponges make-up sponges

Theatrical Make-up: a type of commercial make-up used to add color to the simulated wound. Colors used most often are the following:

clown	white	bright red	bright blue
dark blue	light blue	grey violet	black
brown	yellow	flesh tones:	ivory
light beige	dark beige	light tan	dark tan

Tissue paper: used in creating blisters

Tongue depressors: for use in place of a palette knife to work with modeling substance and makeup.

Additional items: items that are very useful

paper towels	bandage scissors	plastic spray bottle
syringes	tube gauze	prepared blood mixtures
small mirror	hand cleaner (LAVA or Goo-Gone are both excellent)	

Optional items:

Prefabricated Moulage Devices: There are occasions when the moulage team members will not have the time, resources, or expertise to do a through moulage creation and must, instead, rely on prefabricated stick-on plastic or strap-on rubber devices for wound simulation. These devices are life-sized, with bone and flesh shown in relief on the surface. Many of the strap-on devices have plastic tubing installed in them. The tubing, when connected to a hand-held pump and reservoir can simulate bleeding in the wound.

Device: Strap-on: a rubber device which, when properly applied, creates an artificial wound.

Device: Stick-on: a prefabricated device sculptured from thin plastic which, when properly applied to the skin with adhesive and colored with cosmetics, simulates a wound.

Advantages:

1. The materials are easily maintained with soap and water.
2. The devices can be enhanced with makeup to look even more realistic.

Disadvantages:

1. The skin coloring and texture of the strap-on devices will only simulate that of a white male.
2. The strap-on devices are uncomfortable and warm to the wearer.
3. The strap-on devices are difficult to maintain. There are no replacement parts (straps).
4. Some are not very realistic as far as true characteristics of wounds.

Some samples of Strap-On Devices:



FOUR COMPONENTS OF CASUALTY SIMULATION:

Casualty simulation can be defined as the imitation of someone injured in some type of accident or disaster. I believe that in order for your casualty simulation to be effective, it must be believable. This requires some prior preparation on your part. The four components of an effective casualty simulation are **Planning, Moulage, Staging and Symptomatic Acting**.

PLANNING:

Planning is the first component in the success of a casualty simulation exercise. There are many considerations to be made in this stage and a logical pattern will help keep you from making common mistakes.

Before the Exercise

1. Select someone with moulage experience as the moulage team leader.
2. Allow the team leader to select his team members. (1 team member for every 6 victims)
3. Have planning session(s) with the moulage team leader, members and exercise coordinator to discuss the following:
 - a. Type of exercise
 - b. Date, place and time of exercise
 - c. Number of victims to be moulaged
 - d. Types of injuries
 - e. Prepare the scenarios/worksheets or familiarize the team with existing ones (already prepared).
 - f. Identify time, area needed for moulage preparation
 - g. Identify equipment not available

Day of the Exercise

1. Team leader and team members arrive early
 - a. Final briefing by team leader (assignments)
 - b. Set up equipment
 - c. Team leader selects victims or identifies pre-selected victims

DO SELECT:

- 1) Casualties whose physical characteristics will simplify moulage application. (bald, existing amputation, etc.)
- 2) Use Males for chest injuries.

DO NOT:

- 1) Use makeup on persons with obvious skin infections or abrasions.
- 2) Use makeup on persons with known sensitivity or allergies to makeup.

d. Moulage

- 1) Ensure casualties are wearing old clothes as tears and stains are inevitable; also if casualties are being prepared for exercise where the injuries have to be treated, tearing of the clothing to expose the injuries will be necessary.
- 2) See that the casualty is in a reasonable, comfortable position while being made up and is not in a draft or too warm.
- 3) Show appreciation of the casualties cooperation and patience by seen that he receives every assistance while being made-up.

e. Cleanup

- 1) Remember:

"YOUR TASK IS NOT FINISHED UNTIL THE MAKE-UP IS REMOVED"

MOULAGE:

The actual moulage application is the most exciting part of the process since it allows your imagination to have creative license, within reason of course. Remember, your "victims" injuries must appear realistic if they are going to be believable.

To mix these two components together we must have a better understanding of the techniques used in applying moulage. These components are **Blending, Feathering, and Highlighting**.

Blending: mixing or combining two or more types of makeup to achieve a particular type of result.



Usage: Bruise - reds and blues are blended

Feathering: smoothing the edges of modeling clay as it adheres to the skin; blending the moulage colors into the natural skin color of the victim.



Usage: lacerations, fractures

Highlighting: darker color placed beneath a lighter color to give the impression of depth or shadow.



Usage: lacerations, fractures

TYPES OF INJURIES

There are a wide variety of injuries which can be created utilizing the skills described in this manual. The following is just a sample of the various injuries you can create. More advanced injuries are included in the Appendix of this manual for your future use in casualty simulation.

Abrasion: the wearing away of the skin due to a friction source.



To create an abrasion:

- 1) Apply a small amount of cold cream to injury site and blend well
- 2) Apply red to a stippling sponge
- 3) Lightly drag the sponge across the surface of the skin for the desired effect.

Contusion (bruise): an injury produced by an impact where the skin is not broken (lacerated)



To create a contusion:

- 1) Apply a small amount of cold cream to injury site and blend well
- 2) Apply red and blue to a sponge or heel of your hand.
- 3) Blend for effect into the injury site using sponge on the heel of your hand.

Wounds: are always associated with bleeding to some degree. They can be classified as follows:



- 1) **Incised:** caused by sharp instrument such as a razor, knife, or piece of glass and bleeds profusely since the blood vessels are cleanly cut/sliced.



- 2) **Laceration:** will have torn and irregular edges. Such things as machinery, a piece of shell or the claws of an animal cause them. As the blood vessels are torn through, they tend to bleed less than an



3) Avulsion: usually characterized by (bite, tearing of skin, etc.). This type of wound is often seen in facial injuries due to the skin lying closely over bony structures and they bleed profusely.



4) Puncture: will have a relatively small opening but may be very deep and are caused by sharp pointed objects (bullets, ice pick, etc.)

To create a wound:

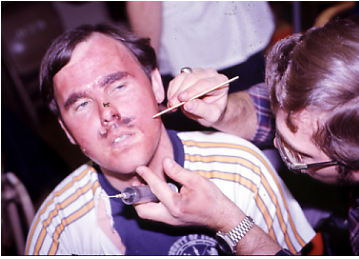
- 1) Apply a small amount of cold cream to the injury site and blend into the skin well.
- 2) Apply a small piece of wax (modeling substance, clay, etc.) to injury site and feather, using a palette knife.
- 3) Make a small incision (can be straight, jagged, or puncture) in the wax.
- 4) Highlight the inside of wound with black (to create depth)
- 5) Apply skin tone makeup using sponge or apply red and blue to give a bruised appearance.
- 6) Sprinkle blood powder on and around wound site.
- 7) Spray with a glycerin water mix to give the desired effect.

Burns: a lesion caused by the contact of heat or fire

The state of the skin texture following a burn from any cause will depend on the degree of heat and the length of exposure. This can be shown to vary from light redness to a black charring as well as from dryness to oozing moisture.

There is an intermediate stage where white blister formations may occur but this does not take place if the burn has penetrated the whole skin thickness. In extensive burns, pain and shock will be severe.

To create a 1st degree burn: (redness)



- 1) Apply a small amount of cold cream to the injury site and blend into the skin well.
- 2) Apply red and blend till desired effect is achieved.

To create a 2nd degree burn: (redness & blisters)



- 1) Apply a small amount of cold cream to the injury site and blend into the skin well.
- 2) Apply red as for 1st degree burn.
- 3) Using a tongue depressor, place a small glob of Vaseline over the red area. (DO NOT SPREAD OUT)
- 4) Tear a piece of tissue large enough to cover the Vaseline.
- 5) Place tissue over the Vaseline and feather the edges.

****Note:** You can use K-Y jelly in place of the Vaseline. (See Advanced Techniques for other variations of this method.)

To create a 3rd degree burn: (dead tissue)



- 1) Apply a small amount of cold cream to the injury site and blend into the skin well.
- 2) Apply red as for 1st degree burn.
- 3) Apply small amount of black and blend into area.
- 4) Apply a thin coat of facial masque and allow to dry.
- 5) When masque is dry, gently peel thus leaving an appearance of dead skin.
- 6) Charcoal powder may be applied to indicate charred skin.

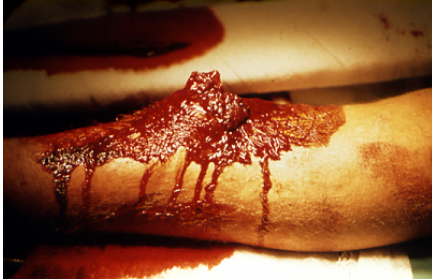
****Note:** See Advanced Techniques for other variations of this method.)

Fractures: a break in the continuity of a bone.

Fractures are associated with pain, swelling, and loss of function. Casualties with broken bones will suffer considerable pain and will resist any effort to move the broken part. Fractures of the upper arm, thigh, and hip are accompanied by moderate shock. Shock is increased if the fracture is open or if there is considerable tissue damage. The two types of fractures are:



Closed: a fracture, which does not produce an open wound in the skin. (swelling and bruising)



Open: a fracture, which has an external wound leading to the break in the bone. (swelling, wound and bleeding)

To create a closed fracture:

- 1) Apply a small amount of cold cream to the injury site and blend into the skin well.
- 2) Apply wax and feather edges.
- 3) Apply red and blue to the area,
- 4) Blend until desired effect is achieved.

To create an open fracture:

- 1) Apply a small amount of cold cream to the injury site and blend into the skin well.
- 2) Apply wax and feather edges.
- 3) Apply flesh tone makeup to area and blend.
- 4) Create wound in wax with palette knife.
- 5) Highlight wound with black to create depth.
- 6) Insert bone fragment into wound,
- 7) Apply red and blue for bruising and blend as needed.
- 8) Sprinkle blood powder in, on and around wound.
- 9) Spray with glycerin and water mix.

SPECIAL EFFECTS:

Special effects are those techniques used for a final touch of realism. They are shock and cyanosis, perspiration, frothing, types of blood, odors and vomitus. Let's examine each of these special effects in a little more detail.

Shock and Cyanosis:



Shock is generally a temporary state of massive physiological reaction to bodily trauma. It is usually characterized by marked loss of blood pressure and the depression of vital processes.

Cyanosis is a bluish discoloration of the skin and mucous membranes resulting from inadequate oxygenation of the blood.

To create Shock and Cyanosis:

- 1) Apply a small amount of cold cream to face, neck, arms and hands; blend well into the skin.
- 2) Using your hand as a palette, mix a small amount of clown white and light/medium blue or blue grey; apply to face, neck and arms; blend into the natural skin color of the victim.
- 3) Apply light/medium blue to lips, ear ridges, ear lobes, nostrils, nail beds, fingers and toes (as needed).

For profound shock: add ivory/yellow to face, forehead, cheekbones and chin. This provides a waxen or pale and clammy appearance. Add blue grey under eyes and to cheek hollows and blend.

- 4) Spray with perspiration.

Perspiration: To achieve the effects of profuse sweating or perspiration, mix 2 parts glycerin with 1 part water in a spray bottle. Spray as needed for proper effect.

Frothing: To create the illusion of a mass of bubbles in or on a liquid.

For increased secretion of saliva: Mix 1 ounce cream of tartar, 1 ounce of baking soda and 1 1/2 ounces sugar. Place in a size 00 gelatin capsule. Allow victim to hold this and a frothing capsule in mouth until needed.

For blood tinged froth: Add a small amount of red food coloring to a capsule. Allow victim to hold this and frothing capsule in mouth until needed.

For a sucking chest wound: Place small pieces of Alka-Seltzer tablets into the wound along with some blood powder. Spray with glycerin and water mixture for desired effect.

Blood Recipes: Caution should be used with the powdered blood mixtures for several reasons. This and most blood preparations contain red food coloring. It may permanently stain hair and clothing. It can be very irritating if it gets into the eyes of your victims.

Fresh Blood: Mix blood powder and warm water. It is generally easier to first stage your victim, then apply the blood powder to the wound, and then spray with water. This alleviates tracking blood from one place to another.

Coagulated Blood: A mixture of blood powder and K-Y Jelly or Vaseline. May be applied with a cotton tipped applicator or tongue depressor.

Blood for the Mouth: Some injuries require the appearance of blood from the mouth and nose. It is recommended that you use the following recipe:

2 cups powdered sugar 1 ounce certified red food coloring
1 teaspoon vanilla 1 teaspoon glycerin
1 cup dark Karo Syrup (Use Karo light for arterial blood)

Mix sugar, vanilla, glycerin and red food coloring. Add the Karo syrup until you have the desired consistency. (May be thinned with warm water)

Odors: Most injuries are the result of an accident with contributing factors and as such, have a peculiar odor around them. These can be staged with:

- scraps of burned material
- deteriorating pieces of bone
- soured milk
- partially burned charcoal briquettes
- pouring a small amount of beer or alcohol on the victims clothes
- allow the victim to `swish' a small amount of beer in their mouth to create the appropriate "breath" odor.

Vomit: Vomit can be created by using oatmeal and water, or graham crackers and water. It can also be tinted with food coloring. Have the victim hold the mixture in their mouth until appropriate moment for maximum effect.

STAGING:

In order to effectively create the illusion of a serious injury or illness you must provide the appropriate contributory cause. This is called **Staging**. It is one of the most important things you must do in order to complete the picture of casualty simulation. Basically it provides the background of the story leading up to an incident.

Staging is a matter of common sense and simple engineering, which can be graded to meet any requirement, from a finger cut on broken glass to a fractured spine in a mangled piece of metal that was once an automobile. Never think that the staging of your 'victim' must be expensive and/or complicated. It can be as simple as a piece of orange peel on wet pavement.

Realism in any incident staged is best achieved when it is planned with an element of surprise. Of course this requires the full cooperation of all those involved in the exercise. Staging is accomplished in the following ways:



- 1) General appearance of the victim
(Ex. torn or burned clothing)
- 2) Placement of victim
(ex. mud puddle, bushes)
- 3) Embedding of foreign objects
(Ex. glass, dirt, bone fragments, knife handle)
- 4) Use of props
(ex. ladder, wire, vehicle)

Additional factors, which must be considered when planning an exercise, are:

- 1) Location: outdoors/indoors (weather plays major role)
- 2) Choice of additional props: appropriate to the scenario (history of the event)
- 3) Number of casualties: appropriate to the scenario
- 4) Types of injuries: appropriate to the type of incident
- 5) Victim's clothing: relative to the scenario and injury
- 6) Pre-Staging: advance notices, or sound effects relative to the scenario
- 7) Assistance: ensuring sufficient assistance in the planning, staging, and operation of the exercise
- 8) Assistants: to be appropriately dressed in relation to their assignments
- 9) Simulators/Moulage Team: allow adequate time for preparation of injuries
- 10) **CAUTION:** Exercise extreme caution in staging disaster scenes. Bear in mind the **SAFETY** factor...you do not wish to create a real disaster or injure someone.

SYMPTOMATIC ACTING:

The information presented to you so far has been primarily aimed at the different techniques used to create the various injuries and to give the victim the general appearance of one who is suffering from those injuries. This is fine as far as it goes. But if you recall my introduction, it takes more than the appearance of a serious injury to challenge the skills of the EMT or medical responder.

It is not enough to just deal with an injury; one must also learn to deal with the emotional trauma and stress of the victim and those around him. The signs and symptoms of serious injury which can be portrayed by the victim are as follows:

- 1) Facial expressions
- 2) Breathing rates
- 3) Actions of limbs or trunk
- 4) Attitude (psychological response)
- 5) History (information relayed to the EMT, MD by patient. Must be relative to the injury and scenario.)

These signs and symptoms can not be portrayed realistically (physically) by the simulated patient. This information can be relayed by an attached vital signs tag.

- 1) Pulse
- 2) Blood Pressure
- 3) Changes in body temperature
- 4) Pupil changes

The following information contains some main groupings of clinical features (signs & symptoms) which are common to most traumatic injuries.

Pain: most pain is related to fear and anxiety. Do not overdo the portrayal of pain. There is no need to over exaggerate.

Shock: expressed in several ways

- 1) *Facial expression:* apathy, eyelids drooping, eyes vacant or dull stare
- 2) *Breathing:* rapid and shallow, irregular. Sighing or deep in severe shock.
- 3) *Actions:* restlessness, rolling of the head, waving of arms or legs (unless portraying a fracture as part of the injury)
- 4) *Attitudes:* initially portrays talkativeness; this phase passes on to mental sluggishness, indifference and unawareness of surroundings. Passing into unconsciousness eventually.
- 5) *History:* complains of weakness, faintness or dizziness. Casualty feels thirsty and asks for a drink of water. In severe shock, appreciation of pain is greatly diminished.

SYMPTOMATIC ACTING: (con't)

The following categories provide some information that will be helpful for the "simulated casualty" to remember as they makes their injuries "come alive" for the members of the rescue team during the exercise. Your job is to provide this information to the "victims" while you prepare their injuries.

Abdominal Wounds: Severe injuries to the spleen, liver, kidneys, pancreas and bowel can occur without causing any sense of ill being for periods varying from several hours to several days. With closed or open severe abdominal injuries, the casualty however generally exhibits the signs of shock, which have been described before.

The only alterations from our previous descriptions are as follows:

- 1) *Actions:* suggests the desire to vomit by the action of retching
- 2) *History:* complains of nausea and some tenderness in the abdomen

Hemorrhage: The features of hemorrhage are similar to those in the portrayal of shock. The degree of shock to be demonstrated is in relation to the amount of blood lost and the amount of tissue damage.

The chart below can help you determine the amount of shock and blood loss for the size/area of the injury.

Area of Wound	Tissue Damage*	Volume Blood Loss**	Degree of Shock
Small	1 hand	10-20%	None to mild
Moderate	1-3 hands	20-40%	Moderate to severe
Large	3-5 hands	40%	Severe
Very Large	> 5 hands	50% +	Severe
*The area covered by the size of the casualty's hand ** 10% volume = 1 pint blood loss 10-30% volume = 1-3 pints blood loss 40 – 50% = 3-5 pints blood loss			

Fractures: with severe fractures there will be moderate to severe forms of shock. The main factor here is the amount of blood lost internally or externally as a result of the fracture. For example, with a closed fracture of the thigh, the casualty may lose over three pints of blood into the surrounding tissue and can be, as a result, in moderate to severe shock. Fractures of the pelvis can cause the same sort of thing to occur.

Some other specific points to bring out about fractures are as follows:

- 1) In fractures of the clavicle (collarbone), the casualty tends to splint the elbow on the side of the fracture with his other hand.

SYMPTOMATIC ACTING: (con't)

- 2) In fractures of the thigh or hip joint, the leg and foot are generally rolled outward.
- 3) In fractures of the wrist, the casualty may complain of a weakness and tingling in their fingers.
- 4) When portraying the pain of a fracture, the casualty should not only lie quietly but also tense the muscles in the side opposite the injury site to enhance the effect.
- 5) Pain in movement may be of the type that causes nausea for a casualty. When the rescuers manipulate a fracture site, the "victim" should say his feels sick!

Burns: A casualty with a burn will react in a variety of ways, which are directly related to the severity of their injury. A victim with a 1st degree burn will have a redness of the skin which is tender to the touch and be in mild pain while a casualty with a 3rd degree burn will be painless due to the damage done to the pain preceptors in the skin. The following chart will help you calculate the severity of your burns by the "Rule of Nines".

Rule of Nines	
Body Surface	Total % Body Surface Burn
Head & Neck	19%
Anterior Trunk	18%
Posterior Trunk	18%
Upper Limbs (9% each)	18%
Lower Limbs (18% each)	36%
Total Body Surface	100%

Severely burned people are often very talkative and tend to move around actively. Shock appears late in burns, it does not occur shortly after the injury.

Signs & Symptoms present in burns include:

- 1) *Facial expression:* anxiety and fear
- 2) *Breathing:* rapid and shallow
- 3) *Actions:* restlessness and agitation. In severe burns there is often an ominous tranquility.
- 4) *Attitude:* one of distress and anxiety. There is a marked tendency to talk excitedly.
- 5) *History:* should relate to the scenario according to the type of burn. Casualty gives a long, loud story according to the type of burn and as described in the scenario.

SYMPTOMATIC ACTING: (con't)

Chest Wounds: A chest wound is any opening from the outside through the chest wall into the chest cavity, which sometimes penetrates the lung and leaves an exit wound. An injury involving the chest and nasopharynx is marked by bright red, frothy, sputtering type hemorrhage. Victims are in mild to severe shock.

- 1) *Facial expression:* marked anxiety
- 2) *Breathing:* difficulty in breathing, struggling for breath, gasping, coughing up rapidly in the final stages.
- 3) *Attitude:* intense activity, almost hysterical, jerking of the limbs aimlessly, waving arms, but casualty not overdo this action.
- 4) *History:* complains of not being able to breathe properly, feeling faint and dizzy; feels cold; describes a funny feeling in the hands and feet; tingling like pins and needles. Gasp out that he/she is losing the use of their hands.

In serious wounds of the chest, the casualty may have to act out the condition of tetany or spasm due to over-breathing and this is what the above history indicates. In tetany or spasm, the position of the hands is very typical. The thumb is flexed over the palm of the hand, the fingers being extended in a straight line with the palm and very slightly flexed. This is known as the "Obstetrician's Hand".

Head Wounds: the symptoms of a major head injury will vary depending on the severity and may include, but is not limited to, the following:

- 1) Unconsciousness
- 2) Headache, nausea, dizziness
- 3) Deformity
- 4) Blood or spinal fluid oozing from the ears, nose and/or eyes
- 5) Paralysis
- 6) Twitching of limbs
- 7) Bruising; Battle sign (ears) and/or Raccoon sign (eyes) may be present

SYMPTOMATIC ACTING: (con't)

Diagnostic Signs: the objective of any casualty simulation is to present the EMT or medical responder with a "victim" who is ill or injured and requires immediate intervention on their part to prevent possible death or disability. In preparing your casualty for the exercise, you can prompt them on how they should act to highlight your moulage efforts. The following chart contains a list of diagnostic signs and their significance, which you can utilize.

Diagnostic Sign	Observation	Indication
Respiration	No respiration; cyanotic; ashen-gray color or general death-like appearance	Respiratory arrest
	Rapid, shallow	Shock, cardiac problems
	Painful, difficult & labored	Dyspnea
	Difficulty in breathing while laying down	Chronic Heart Failure (CHF)
	Snoring	Stroke, fractured skull, alcohol or drug influence, tongue in airway
	Deep, gasping, labored	Airway obstruction, heart failure, asthma
	Gurgling	Foreign matter in throat, pulmonary edema
	Prolonged expiratory phase	Lower airway obstruction
	Prolonged inspiratory phase	Upper airway obstruction
	Pursed-lip breathing	COPD or collapsing lung
	Asymmetrical chest movements	Chest wall injury or ruptured or absent lung
	Crowing	Spasms in Larynx
	Bright red, frothy blood on exhalation with coughing	Lung damage, pulmonary edema, severe lung contusion

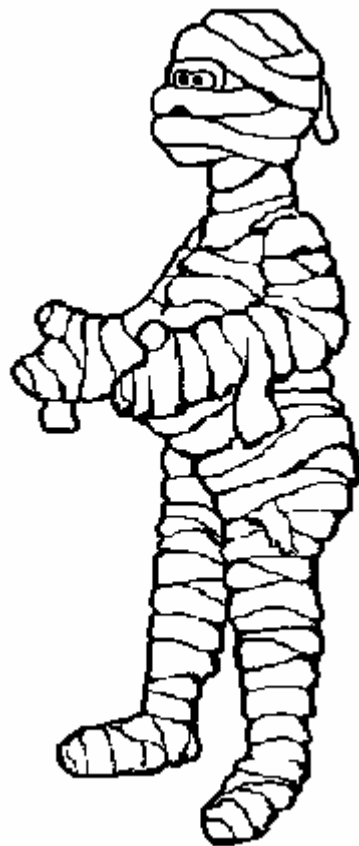
SYMPTOMATIC ACTING: (con't)

Diagnostic Sign	Observation	Indication
Skin Temperature	Temperature cool, clammy skin	Shock
	Cold, moist skin	Body is losing heat
	Cold, dry skin	Exposure to cold
	Hot, dry skin	Excessive body heat
	Goose pimples, accompanied by shivering, chattering teeth, blue lips, pale skin	Chills
Skin Color	Red skin	High blood pressure, heart attack, alcohol, simple blushing & infectious disease
	Cherry red skin	Sunstroke, carbon monoxide poisoning
	White skin	Shock, fright, heart attack, simple fainting, emotional stress & anemia
	Blue skin	Anoxia, heart attack, airway obstruction, poisoning and asphyxia
	Yellow skin	Liver disease
Pulse	Black or Blue skin	Cardiac arrest
	Absent	Cardiac arrest; death
	Rapid, strong	Fright; heat stroke; hypertension, apprehension
	Rapid, weak	Shock; heat exhaustion; bleeding (hemorrhage); diabetic coma
	Slow, strong	Stroke; head injury; diabetes
Mental Status	Brief period of unconsciousness	Simple fainting
	Confusion	Alcohol use; mental condition, slight blow to the head
	Stupor	Severe blow to the head
	Deep coma	Severe brain injury
	Rapid loss of consciousness	Serious head injury or drug overdose
Paralysis, Loss of Sensation, Inability to Move	Lower extremities	Injury to spinal cord in the lower back
	Upper extremities	Injury to spinal cord in the neck
	Limited use of extremities Paralysis limited to one side	Pressure on the spinal cord Stroke, head injury with brain damage

SYMPTOMATIC ACTING: (con't)

Diagnostic Sign	Observation	Indication
Poisoning	Burns on mouth	Caustic poisoning
	Nausea	Drug overdose; ingested poison; poison inhaled in gas form; poison or drug ingested; plant poisoning
Pupil Reaction	Dilated	Shock; unconsciousness; cardiac arrest; brain damage; drug use or overuse; disorder of the central nervous system
	Constricted	Head injury; stroke; poisoning or drug ingestion
	Unequal	Head injury; stroke (may be an old injury)
	No response to light, eyes rolled back in head	Death; coma; false eye; cataracts; seizures
Reaction to Pain	Pain present at injury sites	Injuries to the spinal cord
	Localized pain	Fracture
	No pain, but obvious signs of injury	Spinal cord damage, hysteria, violent shock

APPENDIX



ADVANCED CASUALTY INJURY LISTS

ADVANCED CASUALTY INJURY LISTS

Listed below is a more complex listing of injuries and how to create them utilizing your moulage skills.

INJURY DESCRIPTION

PROCEDURE FOR MOULAGE

1. Inter-cranial Hemorrhage
(forehead)

- a. Select, clean and apply a small amount of cold cream to injury site.
- b. Apply a light coat of red & blue makeup and blend, creating an irregular, circular pattern to the area.
- c. Spray with glycerin water for desired effect.
- d. Stage according to scenario

2. Spinal Fracture (back)

- a. Select, clean and apply a small amount of cold cream to injury site.
- b. Create a massive bruise on the back.
- c. Stage according to scenario.

3. Spinal Fracture (Open) with
Cord Damage due to gunshot

- a. Select, clean and apply a light coat of adhesive to injury site and allow to dry.
- b. Apply small amount of modeling substance to area, leave the center raised and feather the edges to the skin.
- c. Using a round, blunt object (end of pallet knife or grease pencil), create an indentation in the thickened center of the modeling substance.
- d. Highlight the center of the “wound” with black to create depth.
- e. Apply read & B blue to surrounding area and skin to create bruising.
- f. Have casualty lie face down.
- g. Fill the wound with dry blood powder mixture.
- h. Spray powder with glycerin water for desired effect.
- i. Have casualty stand up and allow blood to flow naturally.
- j. If desired, a small amount of charcoal powder may be blown onto the wound for an added effect.
- k. Stage according to scenario.

INJURY DESCRIPTION

PROCEDURE FOR MOULAGE

4. Cerebral Contusion with skull fracture

- a. Select, clean and apply a small amount of cold cream to injury site. (forehead)
- b. Apply a small amount of adhesive to injury site and allow to dry.
- c. Apply modeling substance to area and feather to skin.
- d. Using a palette knife make a jagged edged laceration in the modeling substance.
- e. GENTLY force the sides of the laceration apart.
- f. Highlight the center of the laceration using dark red or black makeup.
- g. Apply red & blue makeup, blend into surrounding area and skin to create bruising.
- h. Fill the wound with dry blood powder mixture.
- i. Spray powder with glycerin water for desired effect.
- j. Stage according to scenario.

5. Crushing Injury of the Hand (Hand and Wrist)

- a. Select, clean and apply a small amount of cold cream to injury site. (hand & wrist)
- b. Apply a small amount of adhesive to injury site and allow to dry.
- c. Apply modeling substance to area and feather to skin.
- d. Using a palette knife make a jagged edged indentation in the modeling substance.
- e. GENTLY force the sides of the indentation apart.
- f. Highlight the center of the indentation using dark red or black makeup.
- g. Apply red & blue makeup, blend into surrounding area and skin to create bruising.
- h. Fill the wound with dry blood powder mixture.
- i. Spray powder with glycerin water for desired effect.
- j. Stage according to scenario.

INJURY
DESCRIPTION

6. Traumatic Amputation of the Hand, Complete

PROCEDURE FOR MOULAGE

- a. Place a roll of 4" roller bandage in victims hand (position of comfort), then using an elastic ace wrap, wrap the victims hand. (hand)
- b. Apply a small amount of adhesive to injury site and allow to dry.
- c. Apply modeling substance to area and feather to skin.
- d. Using a palette knife make a jagged edged laceration in the modeling substance.
- e. GENTLY force the sides of the laceration apart.
- f. Highlight the center of the laceration using dark red or black makeup.
- g. Apply modeling substance to simulated hand being used as the amputated part.
- g. Apply red & blue makeup, blend into surrounding area and skin to create bruising.
- h. Fill the wounds with dry blood powder mixture.
- i. Spray powder with glycerin water for desired effect.
- j. Stage according to scenario.

7. Impaled Object in the Face (glass)

- a. Select, clean and apply a small amount of cold cream to injury site. (forehead; arm, etc.)
- b. Apply a small amount of adhesive to injury site and allow to dry.
- c. Apply modeling substance to area and feather to skin.
- d. Using a palette knife make an incision in the modeling substance.
- e. GENTLY force the sides of the incision apart.
- f. Highlight the center of the incision using dark red or black makeup.
- g. Apply red & blue makeup, blend into surrounding area and skin to create bruising.
- h. Imbed the plexiglass shard into the modeling substance.
- i. Fill the wounds with dry blood powder mixture.
- i. Spray powder with glycerin water for desired effect.
- j. Stage according to scenario.

INJURY
DESCRIPTION

PROCEDURE FOR MOULAGE

8. Open Femur Fracture

- a. Select, clean and apply a small amount of cold cream to injury site. (thigh)
- b. Apply a small amount of adhesive to injury site and allow it to dry.
- c. Apply a flattened piece of modeling substance (thicker in center) to area and feather edges to the skin.
- d. Using a palette knife, make a rough-edged, jagged laceration (edges may be roughed up by pushing the wooden end of a cotton-tipped applicator into the modeling substance and jerking it back rapidly)
- e. Highlight the center of the laceration using dark red or black makeup to give it depth.
- f. Have casualty lie on their back
- g. GENTLY force the sides of the laceration apart and embed animal bone (chalk or cut up sponge) into the wound and insure that it is stabilized.
- h. Pour copious amounts of dry blood powder mixture in and around the wound. (Be sure the bone is covered well with blood powder)
- i. Spray powder with glycerin water for desired effect.
- j. Stage according to scenario.

9. Gunshot Wound to Chest (with no Exit wound)

- a. Select, clean and apply a small amount of cold cream to injury site. (chest)
(REMEMBER TO USE MALES ONLY)
- b. Apply a small amount of adhesive to injury site and allow it to dry. (Use victim with little or no chest hair)
- c. Apply a flattened piece of modeling substance (thicker in center) to area and feather edges to the skin.
- d. Using a round, blunt object; create a circular indentation in the center of the modeling substance.
- e. Highlight the center of the indentation using dark red or black makeup to give it depth.
- f. Have casualty lie on his back

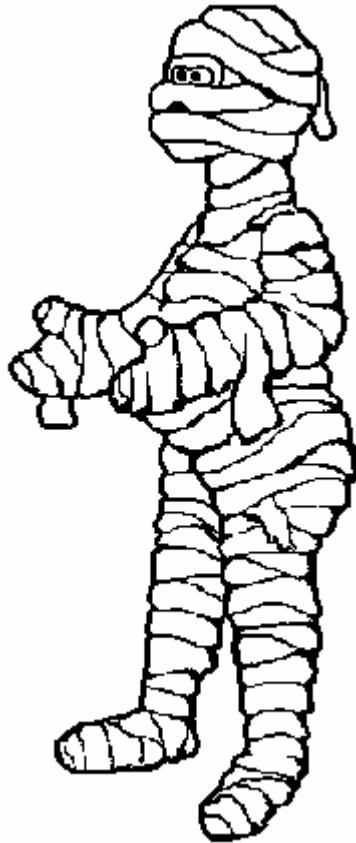
INJURY DESCRIPTION

PROCEDURE FOR MOULAGE

- g. Pour copious amounts of dry blood powder, mixed with a crushed Alka-Seltzer or Bromo-Seltzer mixture, into and around the wound.
 - i. Spray powder with glycerin water for desired effect.
 - j. Stage according to scenario.
10. Severe Hemorrhage of Forearm
- a. Select, clean and apply a small amount of cold cream to injury site. (forearm)
 - b. Apply a small amount of adhesive to injury site and allow it to dry. (Use victim with little or no hair on forearm)
 - c. Attach IV tubing to a 30 cc syringe filled with a prepared blood mixture. (Should not be real thick)
 - d. Tape IV tubing to arm to prevent loss.
 - e. Apply a flattened piece of modeling substance over the open end of the tubing, being very careful not to block.
 - f. Feather the edges to the skin.
 - g. Using a palette knife, make a rough-edged, jagged laceration (edges may be roughed up by pushing the wooden end of a cotton-tipped applicator into the modeling substance and jerking it back rapidly)
 - h. Highlight the center of the laceration using dark red or black makeup to give it depth.
 - i. Apply flesh tone makeup around the exterior of the laceration.
 - j. Pour copious amounts of dry blood powder mixture in and around the wound.
 - k. Spray powder with glycerin water for desired effect.
 - L. Have casualty stand to allow for natural blood flow.
 - m. Instruct the casualty on how to pump blood through the IV tubing in spurts to give the proper effect of arterial bleeding
 - n. Stage according to the scenario.

These are just a few of the many variation of injuries, which you can create using simple tools and your own knowledge and experience. You are limited in your endeavors **ONLY** by your own sense of creativity and ingenuity.

APPENDIX



INJURIES FOR A MASS CASUALTY DRILL

INJURIES FOR A MASS CASUALTY DRILL

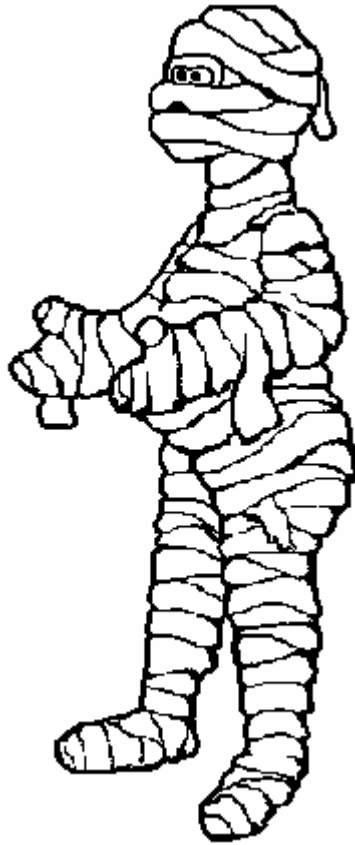
Listed below are just a fraction of the type injuries which can be created for a Mass Casualty Drill. Of course, you must make sure that these injuries are appropriate to the master scenario for the exercise.

1. Penetrating chest wound; penetrating abdominal wound; fractured femur; shock.
2. Penetrating chest wound; respiratory distress; stable circulatory vital signs, alert and oriented.
3. 20% 1st & 2nd degree burns to chest and abdomen; stable vital signs.
4. Shrapnel wound to abdomen and thighs; stable vital signs; alert and oriented.
5. Compound femur fracture; fracture tib/fib; fractured hummers; stable vital signs.
6. Compound fracture of tibia with dislocation of knee and no distal pulses; alert and oriented.
7. Laceration to scalp with history of loss of consciousness; multiple abrasions and lacerations to extremities; stable vital signs; alert and confused.
8. Crush injury to pelvis; stable vital signs; alert & oriented.
9. No obvious injuries; daze and 'out of it'; ambulatory.
10. Fractured humerus and wrist; in pain; ambulatory.
11. Painful ankle; unable to walk; in pain; ambulatory.
12. Fracture mid-shaft tibia; displaced, with no neuro-vascular compromise; alert & oriented.
13. 10% 1st & 2nd degree burns to arms and chest; stable vital signs; ambulatory.
14. 5% 2nd degree burns to face; singed nasal hairs; respiratory distress; alert and oriented; very anxious; ambulatory.
15. Laceration to arm; no neuro-vascular injury; ambulatory.
16. Smoke inhalation; coughing; stable vital signs; alert and oriented; ambulatory.
17. Penetrating head injury; dead.
18. Penetrating chest injury; dead.
19. Laceration to face; ambulatory.
20. Multiple abrasions; possible fracture wrist; ambulatory.
21. Impaled object (butcher knife) in back; decreased breath sounds; decreased vital signs; unconscious.
22. Flail chest; paradoxical respirations; stable vital signs with are beginning to deteriorate.
23. Sucking chest wound, decreased breath sounds, decreased vital signs, nausea & vomiting; confused/disoriented.
24. Evisceration of abdominal wall; shock; decreased vital signs.
25. Electrical burn; dazed and confused; weak/irregular pulse; shallow/irregular breathing.
26. Mentally disoriented; talks to himself; loss of memory; hears voices; displays radical behavior changes.
27. Possible spinal cord injury; pain and tenderness; no deformity but has some paralysis on the left side; no obvious injuries.

INJURIES FOR A MASS CASUALTY DRILL (con't)

28. Impaled object (glass <plexi-glass>) in forehead; profuse bleeding; stable vital signs; ambulatory; alert and oriented.
29. Cardiac arrest; dead.
30. Hyperventilating; no obvious injuries; ambulatory; alert and oriented.
31. Laceration of left hand with fracture of wrist; stable vital signs; ambulatory.
32. Abrasion on face from fall; bruising; stable vital signs.
33. Amputation of left hand; severe bleeding; shock; confused.
34. Fractured jaw; trouble breathing, unstable vital signs.
35. Multiple fractures; full thickness burns > 70%; no respirations.
36. Full thickness burns > 80%; decapitated; no respirations.
37. Full thickness burns > 65%; dismembered; no respirations
38. Spinal, pelvic, & femur fracture; partial thickness burns > 18 %; unconscious, no radial pulse.
39. Full thickness burns > 40%; impaled object in chest; no respirations.
40. Multiple lacerations to arm; profuse bleeding; multiple fractures.
41. Evisceration; multiple fractures, unconscious; gasping respirations.
42. Multiple fractures/lacerations; bleeding all orifices; unconscious; no radial pulse.
43. Sucking chest wound; hemo-pneumo thorax; unconscious.
44. Left leg amputated; flail chest; pelvic fracture; unconscious.
45. Rigid abdomen; fractured humerus; painful stimulus.
46. Rigid bruised abdomen; vomiting blood; conscious & oriented.
47. Pelvic/leg crush injuries; no radial pulse.
48. Femur fracture; facial lacerations, conscious & oriented.
49. Impaled object in chest; unconscious; no radial pulse.
50. Minor facial lacerations; can't follow directions; conscious & disoriented.

APPENDIX



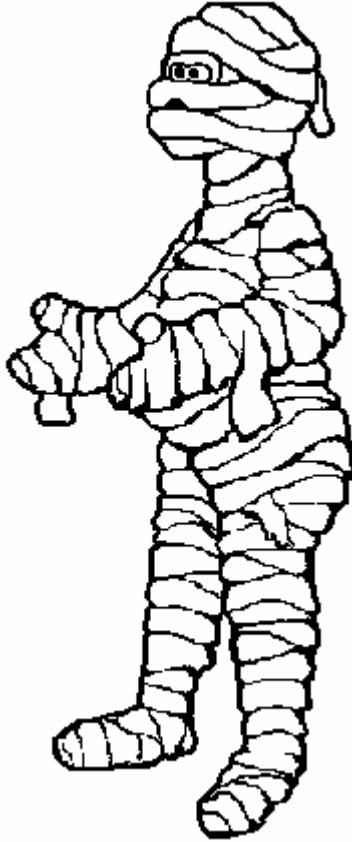
Contents for a
Basic Moulage Kit

Contents for a Basic Moulage Kit

The following items will provide a good basic moulage kit.

Quantity	Items	Quantity	Items
4	Palette boards	1	DEP or KY jelly (small amount in jar)
1	Effects wheel; Bruises	2	DUO, White
1	Effects wheel; Cuts & Bruises	2	DUO, Black
1	Effects wheel; Burns & Blisters	1	Latex Slip, 4 oz.
1	Effects wheel; Trauma simulation	2	½” brush
1	F/X Cream Color; White	4	Sable brush
1	F/X Cream Color; Cyanotic	2	1 ¼” brush
1	F/X Cream Color; Sallow Age	4	Stipple sponges
1	F/X Cream Color; Fair	4	Make-up sponges
1	F/X Cream Color; Olive	2	Steri-pads
1	F/X Cream Color; Medium brown	2	Palette knife
1	F/X Cream Color; Dark brown	1	Pocket knife
1	F/X Cream Color; Capillary Stipple	1	Scissors, large
1	Ultra Lite Cream Highlight	1	Scissors, small (embroidery)
1	Neutral Set (small amount in jar)	2	Combs
1	Sealer, 4 oz.	4	Toothpicks
1	Cold Cream, small container	1	Glycerin, 3 oz.
1	Bromo-Seltzer (small amount in jar)	1	Alcohol, 4 oz.
1	Container of Cotton Balls	1	Container of Q-tip swabs
1	Spirit gum, 4 oz.		

APPENDIX



A SPECIAL “THANK YOU” FOR
YOUR VICTIMS

A SPECIAL “THANK YOU” FOR YOUR SIMULATED CASUALTIES

Every disaster drill or training session would be worthless if you did not have a very special ingredient. That’s right! Your “Victims”! It is always nice to recognize these unsung heroes, those non-winners of a very deserving **Academy Award**. A sample “Thank You” letter is offered for your review and possible use in your exercises. You can modify it as your particular needs dictate.

Dear “Victim”,

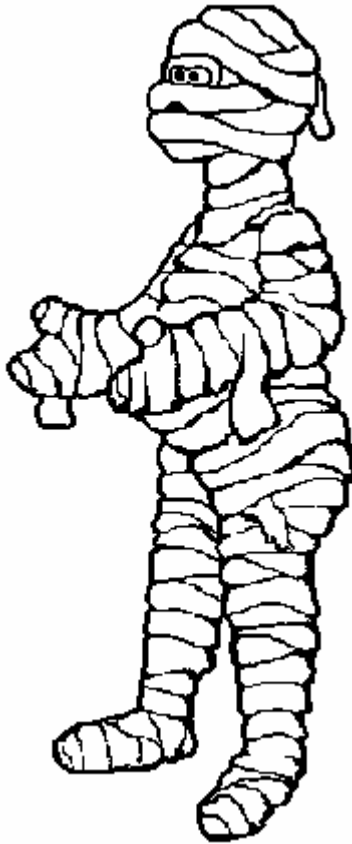
We very much appreciate your time and willingness to assist us in this training evolution. Although this is only an exercise, we are attempting to make it as realistic as humanly possible. For this reason, we will attempt to make you appear, with the help of cosmetics and other equipment, as realistically injured as possible.

In addition to our appreciation for your services – we ask one very big favor of you. This is...

PLEASE REMEMBER! You have been injured. How would you really act if you had been injured? This is your chance to win an imaginary academy award. Please act the part. Please, please – no laughing. When the exercise begins, and until you are discharged from hospital; Play your part. If you have a simulated injury; ACT INJURED! Loudly, emotionally, crying, worried, and all the rest. If you are supposed to be unconscious – act that part. In such a disaster – your family and loved ones may have been killed or injured and you are the only survivor. Or – you may have been separated from your young children. You may have simply lost your memory. Anything that you can do to act the part – will significantly contribute to the success of this exercise.

THANK YOU FOR YOUR PARTICIPATION

APPENDIX



MOULAGE WORKSHEET

MOULAGE WORKSHEET

The moulage team leader uses the Moulage Worksheet during the planning stages to prepare the different injuries for the exercise. The worksheet has several items, which will allow the team to prepare the moulage quickly and efficiently on the day of the exercise.

By having the worksheet prepared in advance, the team has all the information readily available to create the injuries as appropriate for the exercise. This sheet has a diagram of an adult on which the injuries can be drawn. The back has additional information available with instructions for special effects, staging considerations, symptomatic acting directions and other remarks/directions, etc.

The worksheet also provides a means of doing a follow-up on the patient after being treated at the hospital through the use of a patient ID code. It also provides specific data on how to prepare the moulage with an approximate time for preparation.

The patient information box provides a place to document the patient's name, age, sex and social security number (corresponding to the Virginia OEMS Mass Casualty & Fatalities Incident Casualties Book). It also lists appropriate RPMs, as needed for START triage as well as information for the patient's assessment, both in the pre-hospital and hospital environment, plus any appropriate hospital lab results. This will be used to provide information to the rescuer when they perform the proper assessment. This format also aids in the follow-up review of the care given by the rescuer on the scene, in transit and at the hospital.

A sample of this form, with appropriate data, is provided as a guide to follow.

MOULAGE WORKSHEET

Exercise Title: RESPONSE 97

Patient Name: AVA Romero

Type of

Patient Sex: Male Female

Moulage: Sucking chest wound
Hemo-pneumo thorax, Bleeding mouth
nose

Patient Age: 27

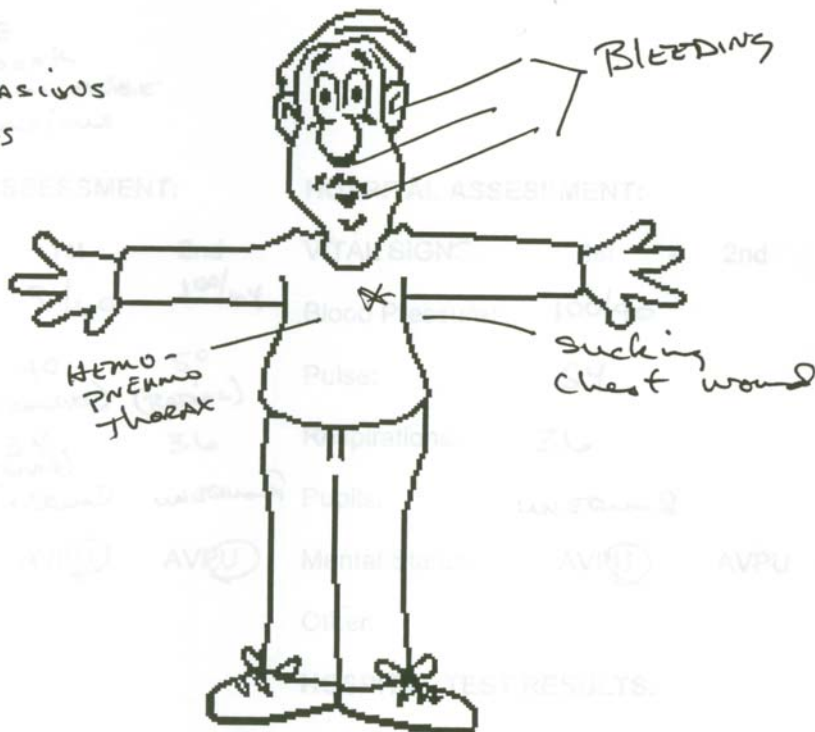
Time Required to Prepare: 30-40 min

Social Security #: 555 - 02 - 5915

Exercise Scenario: BUS ACCIDENT Rollover

Description of Moulage/Injury:

SHOCK
Small abrasions
FACE / HANDS



SPECIAL EFFECTS:

EXPULSED VOMITUS
(BLOOD TINGED)

STAGING CONSIDERATIONS:

LOCATED IN BUS AISLE

SYMPTOMATIC ACTING DIRECTIONS:

UNCONSCIOUS
NO REACTION TO PAIN

ADDITIONAL REMARKS/DIRECTIONS:**PATIENT ASSESSMENT:****S.T.A.R.T. TRIAGE**

R - 34 WEAK
P - NO RADIAL PULSE
M - UNCONSCIOUS

PRE-HOSPITAL ASSESSMENT:

VITAL SIGNS	1st	-	2nd
Blood Pressure:	90/60		100/64
Pulse:	40 (CAROTID)		50 (RADIAL)
Respirations:	34 (weak)		36
Pupils:	unequal		unequal
Mental Status:	AVPU		AVPU
Other:			

NOTES:**HOSPITAL ASSESSMENT:**

VITAL SIGNS:	1st	-	2nd
Blood Pressure:	100/90		
Pulse:	54		
Respirations:	36		
Pupils:	unequal		
Mental Status:	AVPU		AVPU
Other:			

HOSPITAL TEST RESULTS:

Laboratory:

X-ray: HEMO-PNEUMO
THORAX

Other:

MOULAGE WORKSHEET

Exercise Title: _____

Type of
Moulage: _____

Time Required to Prepare: _____

Exercise Scenario: _____

Patient Name: _____

Patient Sex: Male Female

Patient Age: _____

Social Security #: ____-____-____

Description of Moulage/Injury:



SPECIAL EFFECTS:**STAGING CONSIDERATIONS:****REFERENCE MATERIAL**

Listed below is some additional reading material which you may find helpful in perfecting your skills to create more "Realism in Training through Moulage". Best of luck in your endeavors.

**SYMPTOMATIC ACTING
DIRECTIONS:****ADDITIONAL
REMARKS/DIRECTIONS:**

Basic Moulage Techniques, Student Handbook, (TTP 8-3-1), SFP Farmer, Academy of Health Sciences, US Army, Fort Sam Houston, TX 78234

BIZARRO! A Lean by Example Guide to the Art & Techniques of Special Make-Up Effects
Tommy Stinson, Harmony Books, New York

PATIENT ASSESSMENT:**S.T.A.R.T. TRIAGE**

R -
P -
M -

CASUALTY SIMULATION: THE ART OF MOULAGE, HM1 Sandra J. Gurnik, USN, Uniformed Services University of Health Sciences, Bethesda, MD 20814-4799

Community Disaster Exercises: A Manual for their Conduct, State of Florida, Department of Health and Rehabilitative Services, Division of Health

PRE-HOSPITAL ASSESSMENT:**HOSPITAL ASSESSMENT:**

VITAL SIGNS 1st - 2nd

VITAL SIGNS: 1st - 2nd

Blood Pressure:

Blood Pressure:

Pulse:

Pulse:

Respirations:

Respirations:

Pupils:

Pupils:

Mental Status: AVPU AVPU

Mental Status: AVPU AVPU

Other:

Other:

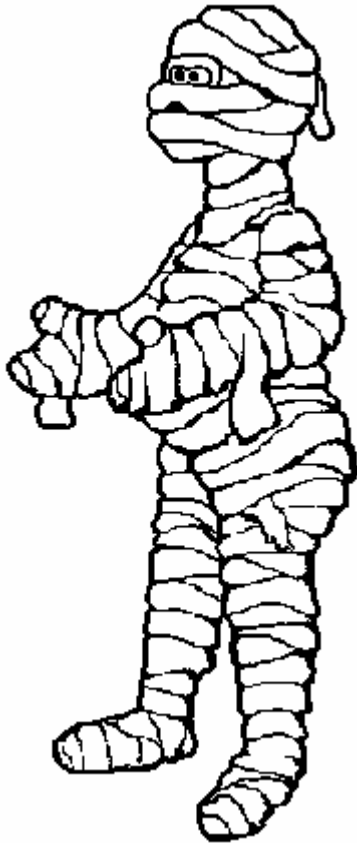
NOTES:**HOSPITAL TEST RESULTS:**

Laboratory:

x-ray:

Other:

APPENDIX



SOME SAMPLES OF MOULAGE









REFERENCE MATERIAL

Listed below is some of the additional reference material, which you may find helpful in perfecting your skills to create more “Realism in Training through Moulage”. Best of luck in your endeavors.

Advanced Trauma Life Support Manual, American College of Surgeons

Basic Moulage Techniques, Student Handbook, (TTP 9-3-10, SFP Farmer, Academy of Health Sciences, US Army, Fort Sam Houston, TX 78234

BIZARRO! A Learn by Example Guide to the Art & Techniques of Special Make-Up Effects, Tom Savini, Harmony Brooks, New York

CASUALTY SIMULATION: THE ART OF MOULAGE, HM1 Sandra J. Gurnik, USN, Uniformed Services University of Health Sciences, Bethesda, MD 20814-4799

Community Disaster Exercises: A Manual for Their Conduct, State of Florida, Department of Health and Rehabilitative Services, Division of Health

Dick Smith’s Do-It-Yourself MONSTER MAKE-UP, Harmony Books, New York

HOW TO MOULAGE, (TTP 8-3), Academy of Health Sciences, US Army, Fort Sam Houston, TX 78234

INSTRUCTOR’S GUIDE FOR CASUALTY SIMULATION, SIMULAIDS, INC., 271 Tinker Street, Woodstock, NY 12498

MASS CASUALTY AND MASS FATALITY INCIDENT EXERCISE CASUALTIES BOOK, Office of Emergency Medical Services, Virginia Department of Health, March 1996

MOULAGE: THE ART OF INJURY SIMULATION, Image Perspectives, 2650 Damon Road, Carson City, Nevada 89701

PARAMEDIC CARE: Principles & Practices; Trauma Emergencies; Bledsoe, Porter & Cherry, Brady Publishers, 2001