

# TATRC 1999 ATA Exhibit

## Multi-Media Script

4th Draft

Visuals

Audio

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THEATER SIGNAGE COPY: The art and science of trauma care has, primarily, been developed by men at war. This exhibit traces the challenges, the milestones and the triumphs of military medical technology from the bone saw to telemedicine.

### Civil War Section

FADE UP CUBE WALL:  
Montage/collage of Civil War battle scenes

SFX: explosion flashes

MUSIC: *Battle Hymn of the Republic*

SFX: Battle sounds, explosions

NARRATOR: The Civil War was the bloodiest war America has ever fought. Over 600,000 soldiers, North and South, lost their lives in that war -- but only 200,000 of them died of combat wounds. The rest -- over 60% -- died of diseases like dysentery, typhus and measles.

GRAPHIC:  
Killed in Battle      600,000  
Died of Wounds      200,000  
Died of Disease      400,000

The reasons for these tragic statistics are many:

SFX: Light up rations display

WALL: Soldiers at mess

Civil war rations were often rotten and the water contaminated. The concept of infectious disease -- along with the benefits of hygiene and field sanitation -- were largely unknown.

SFX: Light up mannequin

CUBE WALL: Soldiers in uniform in hot conditions

WALL: Wounded soldiers

WALL: Dead and wounded soldiers lying on the battlefield

WALL: Ambulance photos

WALL: Andrew Jackson photos

WALL: Field surgery

SFX: Light up surgeon's equipment

The wool uniforms worn by both North and South were a great asset in the winter -- and a debilitating liability in the summer. Their boots seldom fit -- and were not made with a left and right foot.

Soldiers received no training in first aid and carried no field dressings; splints had to be made from whatever was at hand.

The few medics were ill equipped and poorly trained. A wounded soldier either had to walk off the battlefield or wait and hope that someone would find him still alive.

If he were extremely lucky, a Northern soldier might be found by a member of the newly formed Ambulance Corps -- but the springless, two-wheeled wagons provided such a rough ride that many soldiers died in transit.

It was all too common for soldiers to die as Stonewall Jackson did -- wounded in the leg... and killed by an aneurysm during a rough ride to the field hospital.

A field hospital consisted of little more than a sturdy table in a building or tent near a source of water -- hopefully clean water, because water purification was unknown.

94% of the wounds in the Civil War were

display	caused by small arms. And for a bone shattered by a rifle ball, the only treatment was amputation -- so medical technology of the day consisted mainly of knives, ligatures and bone saws.
WALL: Field surgery	
SFX: Light laudanum and whiskey display	For pain management, the medical officer had whiskey and sometimes opium. A new technology, chloroform, was introduced for surgery. But he had nothing to prevent infection -- or stop the spread of disease.
WALL: Soldiers bathing in river, lying sick on beds and stretchers	
WALL: Field hospital photos	Soldiers who survived the field hospital were taken to a state-of-the-art pavilion general hospital, where they had a decent chance of survival.
WALL: Battle scenes, dead and dying	The Civil War was a war of great suffering -- but many lessons were learned and many new military medical innovations resulted from this terrible war.
WALL: Freeze on shot of individual wounded soldier, fade to 1/2 brightness	MUSIC: out
SFX: exit lighting	

## Viet Nam Section

WALL & VIDEO: Collage/montage of Viet Nam battle scenes	MUSIC: <i>Flight of the Valkyries</i>
SFX: explosions	SFX: Battle sounds
WALL & VIDEO: Battle scenes	NARRATOR: In the one hundred years

WALL & VIDEO: Inoculation scenes, jungle scenes, diseased local people

SFX: Light display of prophylaxes

WALL & VIDEO: Soldiers eating, drinking, working in the field

SFX: Light display of rations and water purification kit

WALL & VIDEO: Soldiers with dog tags

SFX: Light dog tags display

WALL & VIDEO: Soldiers in jungle, hot sun, etc.

SFX: Light up mannequin

WALL & VIDEO: Close-ups soldiers wearing helmets, using helmets as wash basins, etc.

SFX: Spotlight helmet on mannequin

WALL & VIDEO: Jungle fighting scenes

WALL & VIDEO: Battle scenes, medical evac scenes

between the Civil War and the war in Viet Nam, the US Army learned a lot about minimizing casualties and treating combat wounded.

Before even leaving for Viet Nam, US soldiers were inoculated against a range of indigenous diseases and given prophylaxes against malaria.

Water purification kits were standard issue. Rations provided balanced nutrition. And, most importantly, the Viet Nam soldier knew the importance of clean food, clean water and personal hygiene.

Metal dog tags carried the soldier's blood type.

Combat uniforms, made of cotton, and jungle boots ventilated to help keep a soldier's feet dry and clean, were well suited to the climate in Viet Nam.

Steel helmets and flak vests gave protection from shrapnel and flying debris, but were not worn because they were too hot and heavy.

In Viet Nam, soldiers were often wounded a long way from a medical unit.

Caring for soldiers wounded far from doctors and hospitals required three new innovations: the highly skilled medic, the

	radio and the helicopter.
WALL & VIDEO: Medics at work on the battlefield	Medics in Viet Nam were trained to function independently. In addition to diagnosing and treating a range of diseases, they were able to give sophisticated first aid, resuscitate and sustain the seriously wounded for evacuation.
SFX: Light display of medic's kit	The medic's standard issue included dressings and ligatures to arrest bleeding, intravenous infusions for the management of fluid loss and morphine for pain management.
WALL & VIDEO: Radio's in use SFX: light field radio display	The radio enabled soldiers in the field to call for rapid medical evacuation.
WALL & VIDEO: Helicopter images SFX: Light helicopter model	And the helicopter, often at great risk, flew in to provide the fastest and most effective medical evacuations ever performed, usually getting the soldier to a hospital in less than an hour.
WALL & VIDEO: Field hospital images	Evacuation in Viet Nam was to well equipped, fixed facility hospitals, in safe areas, capable of providing world-class care of war trauma and disease.
WALL & VIDEO: closing montage - battle scenes, first aid, evac and hospital images	As a result of the medical and protective technologies employed in Viet Nam, only 3% of soldiers evacuated from the battlefield died of their wounds, compared

to a 10% rate in World War I.

However, the killed in action rate remained at 19%, little-improved since World War I. The post-Viet Nam technology effort has been aimed at reducing this figure.

WALL: Freeze on image of wounded being loaded onto helicopter, fade to 1/2

MUSIC: out

SFX: exit lighting

## Desert Storm Section

WALL & VIDEO: Desert Storm battle scenes

SFX: explosions

MUSIC: Contemporary military theme

SFX: Battle sounds

NARRATOR: In the thirty years between Viet Nam and Operation Desert Storm, the medical technology continued to advance but so, too, did the lethality of weapons.

WALL & VIDEO: Burning tank & truck images

SFX: Light Nomex display

Underneath the soldier's cotton uniform, a heat-dissipating Nomex undersuit protected aircraft and tank crews against burns.

WALL & VIDEO: Soldiers in helmets & flak jackets

SFX: Light up helmet & vest display

Kevlar helmets and improved flak jackets with kevlar chest plates were mandatory wear.

WALL & VIDEO: Soldiers in NBC suits

SFX: Light mannequin

Nuclear/biological/chemical suits and respirators gave protection against the greatest real threat of chemical and biological warfare.

WALL & VIDEO: soldiers in gloves & goggles

Gloves and light ballistic eye protection were standard wear.

WALL & VIDEO: Soldiers being vaccinated

SFX: Anti-chemical drugs display

Soldiers in Desert Storm were vaccinated against biological warfare agents and drugs were issued to counteract the effects of nerve agents.

WALL & VIDEO: Soldiers in the field

Clean water was plentiful and high-calorie rations readily available.

SFX: Light up rations display

WALL & VIDEO: training footage

Individual training and acclimatization was so good that Desert Storm enjoyed the lowest disease and non-battlefield injury rate in history.

WALL & VIDEO: Medics in action

SFX: Light up medic's kit display

Medics in Operation Desert Storm were trained to a high level and equipped with state-of-the-art equipment, including IV fluids, airways, high-quality splints, burn dressings and morphine.

WALL & VIDEO: Battalion aid vehicles

The first level of care in Desert Storm was provided by battalion aid stations using tracked or wheeled vehicles, which used global positioning systems to locate casualties quickly.

WALL & VIDEO: Computers, phones and radios

SFX: light up computer, phone, radio display

Lap-top field computers, satellite telephones and secured radios were used to transmit medical information at great speed.

WALL & VIDEO: Evacuation images

SFX: Light up Hum-vee/Black Hawk/Huey models model

Evacuation from the battlefield in Operation Desert Storm was performed by Hum-Vee ambulances, the aging Huey "Dustoff" and state-of-the-art Black Hawk Air Ambulances,

WALL & VIDEO: DETMEDFS images

Far-forward medical aid was provided by Combat Support Hospitals, using the ultra-modern Deployable Medical Systems, or DETMEDFS, mobile equipment.



SFX: Light up display of monitoring equipment

WALL & VIDEO: Battle scenes

Equipped with an array of state-of-the-art diagnostic and treatment technology, medical technology advances in Operation Desert Storm contributed to the fact that the died-of-wounds rate was a mere one-half-of-one percent, the lowest in military medical history.

The killed-in-action rate, however, remained at 19%. Little changed since the beginning of the century. This is the focus of modern combat medicine and technology research.

WALL & VIDEO: Freeze on evac shot and fade to 1/2

MUSIC: out

SFX: exit lighting

## Soldier of Tomorrow Section

**WALL & VIDEO:** Current images of soldiers training in high-tech gear, smart bomb footage, soldiers in high-tech support roles

**SFX:** light up mannequin

**MUSIC:** Futuristic military theme

**NARRATOR:** The soldier of tomorrow will not only be physically and psychologically tough, but will also be a skilled technician who takes years to train and millions to equip. Replacing tomorrow's soldier -- whether he's taken out by a missile or microbe -- will be difficult and expensive. Even today, training an Apache pilot costs an estimated 1/2 million dollars and takes 52 weeks. In tomorrow's military, the soldier will be the most valuable asset on the battlefield.

So the goal of tomorrow's military health care system will be to keep our soldiers in optimum health at all times, through an increased emphasis on prevention -- and the earliest possible intervention. New telemedicine and advanced medical technology will be used to enhance medical readiness, provide battlespace medical awareness and enable more effective employment of medical forces.

**WALL & VIDEO:** Montage/collage of new technologies, civilian and military, especially communications, computer and video technologies

In pursuit of this goal, the US Department of Defense will seek out new technologies with new capabilities. But in this age of unprecedented technological proliferation,

great potential will not be enough. Only those technologies which offer real value - - by being practical, dependable and easily deployable, in addition to offering great promise -- will be good enough for tomorrow's soldier.

Already, new high-value technologies are emerging:

WALL & VIDEO: images of soldiers in body armor, NBC suits, etc.

SFX: Light up mannequin

Tomorrow's soldier will wear a smart suit that incorporates body armor that is lighter and stronger than previous issues and Nuclear/Biological/Chemical protection, complete with built in respirator.

WALL & VIDEO: images of helmets

SFX: Light up helmet

The helmets will feature built-in communications devices, hearing protection, laser protection and heads-up visual displays. They will also have high ballistic protection.

WALL & VIDEO: Third-world hospital and disease images

SFX: Light up display of vaccinations

Tomorrow's soldiers will be given immunity against a wide range of disease threats, such as anthrax and other genetically engineered diseases.

WALL & VIDEO: NBC devices

SFX: Light up body armor display

Nuclear, Biological/ Chemical warning systems will be miniaturized and simplified for personal use.

WALL & VIDEO: images of the PSM, computer maps with blinking lights, PSM monitor read-outs

SFX: Light up PSM display

Tomorrow's soldiers will be issued Personal Status Monitors to enable information on an individual soldier's location and health to be monitored, to

WALL & VIDEO: images of the PIC & PIC read-outs

SFX: Light up PIC display

WALL & VIDEO: Current medic training and/or instructional footage

WALL & VIDEO: CATHSIM VR displays, training footage

SFX: Light up CATHSIM unit

WALL & VIDEO: METI data displays, training footage

SFX: Light up METI display

WALL & VIDEO: contents of current medic kit

WALL & VIDEO: images of palm top computers

SFX: Light up palm-top display

ensure fast location, treatment and execution...

and a Personal Information Carrier on which the soldier's medical treatment can be voice-recorded, photographed and updated at every point of intervention.

The medics of tomorrow will be highly skilled medical professionals -- more highly trained than any medics in history - - thanks to new training technologies like virtual reality trainers and patient simulators.

Virtual-reality trainers are technologies that train medics in performing tasks such as intravenous infusions.

Patient simulators and medical mannequins are computerized patients, programmed to demonstrate the vital signs and symptoms of a variety of traumas -- giving medics realistic training and practice in trauma care.

And tomorrow's medics will be equipped with powerful new trauma-treatment technologies, like:

A palm-top personal computer device which allows the medic to record voice data on a soldier's PIC, record visual data through a small camera and use voice-prompts to step through difficult medical

	procedures.
WALL & VIDEO: Fibrin bandage images SFX: Light up Fibrin bandage display	Fibrin bandages -- a rapidly impregnated bandage that stops hemorrhaging from major wounds, including heavy arterial bleeding...
WALL & VIDEO: Blood substitute images SFX: Light up blood substitute display	Blood substitutes that have the capability and characteristics of blood...
WALL & VIDEO: New airways & splints images SFX: Light up new airways & splints display	New airways for more effective tracheotomy respiration, and modern splints for better immobilization of shattered limbs.
WALL & VIDEO: Smart stretcher images SFX: Light up smart stretcher display	Tomorrow's medic will use a new lightweight smart stretcher which can maintain and sustain the patient in transport.
WALL & VIDEO: Dustoff images SFX: Light up Dustoff/Osprey models	Evacuation from tomorrow's battlefields will be accomplished through technologies especially adapted for that purpose, like the UH60Q Blackhawk Dustoff helicopter, and the new tilt-rotor Osprey.
WALL & VIDEO: Aztec exterior images, including close-ups of identifying signage	Evacuation of tomorrow's soldier will be to a unique medical unit in a far-forward position. The Advanced Surgical Suite for Trauma Casualties -- or ASSTEC -- combines state-of-the-art medical technologies with far greater mobility and lower logistical cost than any field hospital ever deployed. It's purpose will be to

provide life and limb-saving surgery and to stabilize patients for evacuation to definitive care in hospitals out of the combat zone.

The ASSTEC is equipped with::

WALL & VIDEO: 3D ultrasound images

3D Ultrasound diagnostics...

SFX: Light up ultrasound display

WALL & VIDEO: Hand-held X-ray images

Hand-held X-ray units...

SFX: Light up Hand-held X-ray display

WALL & VIDEO: Mini-anesthetic images

Mini-anesthetic devices...

SFX: Light up Min-anesthetic display

WALL & VIDEO: Old satellite link images

And a complete telemedicine suite linked to the Internet through satellite phones a fraction of the size of previous units.

SFX: Light up satellite phone display

WALL & VIDEO: Images of telemedicine suite, Internet conferencing, transmitted patient information screens

In the telemedicine suite, remote monitors transmit the patient's blood pressure, EKG, pulse, temperature and other status information, in real time, to medical consultants thousands of miles away -- giving ASSTEC physicians immediate access to specialized expertise anywhere in the world... and giving tomorrow's soldier the finest medical care in the world.

SFX: Light up remote monitors display

WALL & VIDEO: Soldiers using high-tech weapon systems

Tomorrow's soldier will be much more highly trained, much more expensively

equipped and far more difficult to replace than any soldier in history.

WALL & VIDEO: high-tech military medical facility images

That's why tomorrow's military medical system must be the most effective health care system in history.

Having learned through trial by fire the value of technology in minimizing casualties -- but facing rising medical costs and shrinking military budgets -- tomorrow's military will create that system by employing only those technologies which offer the greatest value...

because nothing else is good enough... for tomorrow's soldier.

WALL & VIDEO: Freeze frame on close-up of soldier in high-tech gear, fade to 1/2

MUSIC: out