19 December 2000

MEMORANDUM FOR THE RECORD

From: Captain K. E. Hayashi, COMNAVSURFLANT Force Medical Officer

Subj: ADDITIONAL COMMENTS ON COLE IMMEDIATE LIFESAVING ACTIONS AND EMERGENCY MEDICAL RESPONSE

Tab: (A) USS COLE (DDG 67) Casualty Synopsis

1. On 12 December 2000, members of the USS COLE (DDG 67) medical team - Command Master Chief, [redacted], Independent Duty Corpsman, HMC(SW) [redacted] junior corpsman, HN [redacted] and a corpsman striker, SN [redacted] - were interviewed at the Afloat Training Group, Norfolk, VA. CAPT K. Hayashi, MC, USN, and HMCM(SW) R.E. Bailey, USN of COMNAVSURFLANT Medical conducted the interview, under the direction of CAPT M. Miller, USN.

2. Three areas of concentration were examined: HM Perspective Post-Incident, Retrospective Issues, and After Care. The primary focus was directed to issues of immediate medical response, triage, training, and medical supplies and equipment in order to develop lessons learned.

a. <u>HM Perspective Post-Incident</u>

(1) Personal:

(a) **Where were you when the explosion occurred?**
HMC was en route from the CPO Mess to CPO Berthing. HMCM was in an MWR meeting in Ship's Training Room. HN and SN were in Sick Bay (Medical Treatment Room 1-220-3-L)

(b) **Where you injured/disabled?**
None were injured.

(2) First Response:

(a) **Who responded to assist casualties?**
All crewmembers took actions to provide buddy-aid and transport the wounded.

(b) **Where did you report?**

HMC responded to his GQ station, Forward BDS (1-58-2-L), and worked at Repair 2 during initial efforts. He noted that he actually wasted time trying to get to his GQ station when he was actually needed amidships. This is attributed to the lack of communications / 1MC system being inoperative.
HN, SN and HMCM reported to Aft BDS (2-140-1-L).

(c) **What type of on-scene care was provided?**
Basic first aid; bandaging, hemorrhage control, splinting.

(d) **What medical equipment, supplies did you have access to and what was used?**
First Aid Boxes (FAB) and Portable Medical Lockers (PML) were use by crewmembers. (PMLs were located at Repair 3, Flight Deck area, and Forward BDS.)
NOTE: Due to padlocks, PMLs were opened using fire axes. [Suggested use of plastic ties that can be easily broken without damaging lockers.]

(3) Casualty Movement:

(a) **How were injured moved from the blast area (methods - stretchers, Miller body boards)?**
In addition to Buddy Carries, mostly by Stokes litters. Miller Body Boards were found to be difficult to handle even with small frame patients. Search and Rescue (SAR) litters were also used. When they ran out of litters, the Sick Bay doors were used to move patients. Note: Stokes Litters were also used to move the deceased.

(b) **What evacuation routes were used?**
The starboard passageway was used to stage casualties until security was set topside; approximately 15-20 minutes. Casualties were then taken aft to the flight deck, which is on the same level.

(c) **Where were casualties taken?**
These areas became casualty collection areas: Aft BDS, starboard quarterdeck and flight deck.

(d) **Did you encounter obstacles that delayed first aid and transport?**

The starboard passageway way the only fore/aft passage. Casualty movement was in competition with DC efforts moving in the opposite direction.

(4) Casualty Staging Area/Triage:

(a) **What additional care was provided, who provided it?**

Crewmembers provided first aid measures while being directed by the medical team.

(b) **How long did it take to establish a recognizable triage system?**

HMC and HMCM directed treatment using triage standards from the onset but there was no set-up of one specific triage site. Because no patients were classified as expectant, or classified as not needing care, there was no triage in the classical sense.

(c) **How was triage performed and who evaluated casualties?**

HMC and HMCM evaluated casualties in their respective areas and did not meet up or communicate during the incident. HMC then migrated to the amidships quarterdeck and determined the order of evacuation of the wounded.

(d) **What was the Command and Control structure?**

The XO and other officers conducted all off-ship communication and organized evacuation efforts.

(e) **How did you communicate needs and status?**

As the 1MC was down due to power loss, runners were used to fetch items and pass information.

(f) **Who did you communicate with?**

Executive Officer and other designated officers.

(g) **How did you track patients from triage to MEDEVAC?**

Due to overwhelming urgent patient needs, information was not recorded until each casualty was being removed from the ship. A LT served as recorder, listing the patient identifying data and diagnoses as noted by HMC.

1. **Were Triage Tags used?**

They were only used for fatalities. Time pressure prevented filling them out for the wounded.

2. **Did you use a recorder during treatment or reconstruct events after?**
As noted above.

(h) **How much of your time was spent in Medical Command and Control (communications, organizing, evacuation, etc)?**
None.

(i) **How much was spent in actual patient care?**
All of the medical team's time was spent conducting and directing casualty care.

(5) Casualty Treatment:

(a) **How would you rate the effectiveness of crew first aid measures?**
The team rated the crew first aid response as excellent in both treatment and transportation.

(b) **What were some strengths noted?**
Methods taught as "GITMO Wounds" were applied successfully.

(c) **What were some apparent weaknesses?**
None were noted.

(d) **Were universal precautions (gloves) used when treating casualties?**
Gloves were not used by the larger amount of those providing primary aid.

e. **How many of the crew were treated and returned to duty? What types of injuries did they have?**
Two or three were evaluated at a local hospital and returned to the ship. The medical team's recollection is that they were possible fractures that were cleared after x-ray evaluation. The philosophy during the initial response and the weeks after was that if an individual had an injury or illness, regardless of severity, they would leave the ship due to limited / poor sanitation and marginal living conditions.

(6) MEDEVAC:

(a) **What aeromedical or ground assets were used?**
Water taxis were used to transport patients from the dolphin to shore (~15 minutes trip). Local ambulances were then used to transport patients to hospitals.

(b) **At what increments were casualties transferred?**
Unknown.

(c) **What were the timelines from injury until transfer off the ship?**
All casualties were off the ship within 99 minutes of the explosion.

(d) **What maintenance care was provided to casualties?**
Morphine was administered to relieve pain, but due to the rapid evacuation, no other medications (such as antibiotics) were used and few received intravenous fluids.

(e) **How were casualties removed from the ship?**
The ship was moored to a barge. The accommodation ladder was not rigged until much after the incident. A ladder was placed next to the ship and casualties were carried in litters down the ladder with considerable difficulty. [A point highlighted by a BM1 was the difficulty of rigging the accommodation ladder and the need for some type of portable, lightweight ramp or ladder that could be deployed quickly and easily.]

(7) Decedent Affairs:

(a) **Where were remains staged?**
They were staged near helo control, well away from the triage area. They were later moved off the ship to a shack on the barge. An air-conditioned room served as the temporary morgue. There were nine body bags on board. More were obtained from other units.

(b) **Were medical personnel involved in transferring remains?**
Most of the initial recovery was accomplished by several crewmembers with some assist by senior HMs. Initially, four fatalities were removed. After the FBI arrived (Monday), four

days after the Thursday blast, their team continued recovery efforts of the remaining 12. NOTE: One patient died at a hospital in Aden the night after the blast.

(8) Medical Spaces/Equipment:

(a) **Status of the medical spaces - Sick Bay / Forward BDS / Aft BDS?**
Sick Bay could not be used although stock was accessible as needed. Both BDS spaces were intact.

(b) **Did you have power in any medical spaces?**
All power was lost due to the blast. All work was done by battle lanterns. Power was restored only to each BDS' 4 days post-blast. Only the Aft BDS had some air conditioning (AC), and the Forward BDS never regained AC. High temperatures and lack of AC compromised medications in the forward medical storeroom.

(c) **Were any medical spaces used to treat patients?**
Both BDS spaces were used initially. (In the weeks after the incident, the aft BDS served as sick bay.) NOTE: BDS emergency potable water tanks became useful due to compromise of the ship's potable water supply after the explosion.

(d) **What was the status of your medical equipment after the explosion?**
No critical equipment items were lost.

(e) **What was the status of medical storerooms?**
Forward and aft storerooms were intact.

(f) **Did you have medical stock distributed fore and aft or were like items stowed in one location (i.e., 6505 stock)?**
All 6505 stock (medicinals) are stowed in the forward storeroom since the layout of the space better lends itself to stocking smaller items such as bottles. Other stock is divided between the two storerooms. A major concern was oxygen. There are not enough regulators on board to outfit all the smaller "D" size cylinders. These cylinders were used with many of the seriously injured as they were evacuated. It was also noted that the "O" rings on the regulators did not seal readily.

(9) Controlled Medicinals:

(a) **Did you have ready access to pain medications?**
HMC retrieved the working stock of morphine from the sick bay safe when he realized the scope of the casualties. The team considered morphine to be a reasonable drug for this situation.

(b) **Did you have adequate amounts to support triage and MEDEVAC?**
There was an adequate supply in the working stock. Due to the rapid evacuation of casualties, only one shot was required for each deserving case. However, if additional amounts were needed from bulk stock, he would have had problems since the bulk custodian was ashore coordinating evacuation efforts. There would have been considerable confusion in obtaining the [duplicate] combination for the bulk safe from the CMS custodian.
[Suggestions: 1) All controlled medicinals be held in the custody of the SMDR (with current inventory requirements maintained). 2) Current combination safes be replaced by a key-locked unit that can be broken into if necessary. (Opening a combination lock under extreme mental stress in dim lighting can cause undue pressure for the SMDR.)]

(10) Blood: Due to concern for the local blood supply, the walking blood bank was activated and approximately 20-30 units were drawn from crewmembers at a local hospital.

b. <u>Retrospective Issues</u>

(1) AMMAL Issues (Core/FAB/PML/BDS):

(a) **What are some definite lacks and/or needs?**
There were no items currently not on the AMMALs that were considered necessary. The following issues were noted:

- HMC had 14 boxes of surgical gloves in stock. By the time the crew left the ship, he had about ½ a box left. Most were used in support of remains recovery and clean-up efforts. (FBI and others brought no stock of such items.)
- Surgical masks became scarce also for the same reason.
- The eugenol (used to mask the smell) held as part of the Authorized Dental Allowance List (ADAL) was expended quickly

during remains recovery efforts. As a last resort, workers were using vanilla extract.
- Having stock well in excess of AMMAL levels is paramount on deployment.
- PMLs: There should be at least two on board in separate locations.

(b) **What would you think of requiring crewmembers to carry personnel first aid supplies under certain conditions of readiness?**
Not considered advisable due to the ready supply of First Aid Boxes (easily broken wire seals) and PMLs throughout the ship.

(2) Mass Casualty Bill:

(a) **How well did the Mass Casualty Bill work during this incident?**
The Mass Casualty Bill was never formally activated. Due to the loss of 1MC, there was no way to call away a response. The crew simply responded as needed, either to Repair Lockers or to casualty care. Resources were then redistributed by the command elements as needed. It was clear that the basics exercised in drills lead to a rapid response.

(b) **Had you ever practiced "alternative" GQ or Mass Casualty drills with notional damage to Medical, Mess Decks or other main casualty staging areas during TSTA, FEP, etc?**
The last Mass Casualty drill was held in MAR 00 and FEP was conducted nine months prior to deployment.

(c) **What would be some beneficial changes to Mass Casualty Bill?**
There were none suggested.

(d) **Is there a need for a more unobtrusive recording method/device to replace manual record keeping?**
The possibility of having some sort of hands-off recorder appealed to the team because some information was lost due to lack of opportunity to make documentation in light of the large amount of casualties.

(3) Training:

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(a) **What would be some beneficial changes to first aid training of crew and stretcher-bearers?**
During INDOC, all crewmembers on COLE receive training on GITMO wounds and CPR. The continued emphasis on this training was seen as absolutely critical to the crew's effective response. There was an approximate 30% crew turnover during the three months before deployment. Continued emphasis of first aid training is very important. There were no changes suggested for crew training.

The stretcher-bearers had been assigned for about three months. The understanding between the medical and DC organization is that they first assist in setting condition Zebra, then report as directed by HMC.
NOTE: There was some difficulty in getting personnel assigned as stretcher-bearers earlier and this incident supports having permanent personnel assigned that can be trained extensively.

(b) **What would you change (add/delete) from IDC training to better prepare you for this type of event?**
More trauma / mass casualty emphasis in IDC school and refresher courses might improve response.

(c) **How could you better prepare your HMs and crew for this type of event?**
HN noted that there was no emphasis on HM involvement in mass casualty drills at her last assignment to a shore clinic. She simply served as a vital signs tech while the officers triaged and moved the patients. Perhaps more involvement of the HM would increase awareness and response capabilities of those .

(4) Impact on personnel treating seriously injured crewmembers:

(a) **What were the prominent signs of the psychological impact?**
There were none initially due to the frenetic activity level. Later, several crewmembers were treated by the SPRINT / SIRT (psychological intervention and trauma stress prevention) team for insomnia with medications they brought along. HMC, for a brief period, also used valium to assist several crewmembers with sleep.

A major point stated by HMC is that the medical team is "smothered" by the crew in such a situation. They become both Corpsmen and Chaplains to the crew and the pressure on them is considerable. This is another point that may be considered in training IDCs.

(b) **Did lack of gloves and precaution methods for crewmembers cause them concern?**
Contact with blood did not appear to be a consideration during the casualty phase. The need for gloves became important during recovery of remains and clean-up phase.

A suggestion for including non-sterile gloves in the FABs was thought a good idea by the team.

(5) Preventive Medicine: The following factors were brought out during the interviews.

(a) Sanitation was very poor from Thursday (the day of the incident) to Monday.
- The CHT system was down due to lack of power. There was one head on the barge to serve the entire crew. Although heads were secured on board, crewmembers continued to use them.

(b) Potable water was down since there was no ability to brominate. Bottled water was brought aboard but it was obvious that many were not washing their hands.

By Sunday, there were approximately 12 case of diarrhea. The stock of antibiotics (Ciprofloxacin) was limited. The number of cases increased to approximately 70. [Suggestion was to carry more Ciprofloxacin during deployment.]

(c) Lack of air conditioning and 110 degree heat drove crewmembers topside. Shade was at a premium. The Sun Protection Factor (SPF) 15 sunscreen carried on board was considered inadequate both in supply and strength. Personnel were sent ashore to obtain sunscreen from local stores. However, there were no cases of extreme dehydration or heat injury noted. Air conditioning was restored on the 4th day.

(d) Initially food was brought aboard from local hotels. There were long delays and no temperature controls of

the food. That may have added to the diarrhea problem. The situation improved once other ships were providing food.

(e) Overall poor sanitation caused a fly problem. After air conditioning was restored, personnel started taking food items to berthing area. This practice had to be curtained due to sanitation concerns.

(f) FIFTH Fleet Medical considered there to be a danger of malaria and advised that the crew start chemoprophylaxis using doxycycline.

c. <u>After Care</u>

(1) **What other medical personnel provided assistance (Fleet Surgical Team, MD's, RN's, other HM's)?**
There was no on board assistance during the casualty evacuation phase.

(2) **What equipment/supplies did augmented medical personnel bring and what kind of treatment were they able to provide?**
N/A. There was no on board assistance during the casualty evacuation phase.

(3) **How useful was the SPRINT/SIRT to you and what would you have done differently with them if you had the opportunity to change their procedures, team composition, etc.?**
The SPRINT /SIRT team was seen as a very positive asset. There were no suggestions for changes. (They were available five days after the incident until the homecoming.) 5th Fleet also provided excellent support in obtaining supplies and services.

3. Medical Lessons Learned

a. Post-Explosion Communications

(1) Discussion: The 1MC and all other electrical systems were inoperative post-explosion. This forced medical team members to operate largely independently at different locations (i.e. Forward Battle Dressing Station (FBDS), Aft BDS, and Quarterdeck). This delayed opportunity for the medical team and the command to complete a tally of the wounded and maximize command and control tools. The only off-ship communications was

a cellular phone. A battery rotation with off ship resources kept it powered.. CONUS commands (e.g. TYCOM, CINC, BUPERS) had very limited visibility on the nature of injuries, prognosis, treatments, location, evacuation plans, etc. This lack of communications made it difficult to optimally prepare staffs to provide patient care at follow-on treatment locations, and to advise families, ombudspersons, chaplains, etc. on these details.

(2) Recommendations: Provide medical team members with wireless communication units that can be operated with headsets, permitting them to provide patient care while communicating. Explore alternative backup communications methods for both within the ship, and for the ship to communicate off ship securely (e.g. amateur radio-type transceiver) which can operate independent of ship's power, along with more cellular phones which can operate in different countries. Develop standardized templates (similar to joining reports now used in Fleet exercises) for patient information that can be "pushed" on a regular basis from within the AOR by commands (i.e., ship / local fleet command as resources allow) to BUPERS, TYCOMs, and CINCs.

b. Post-Explosion Patient Transfer Ashore

(1) Discussion: A major limiting factor in transferring patients off the USS COLE to local hospitals was the substantial time needed to rig the ship's accommodation ladder. The accommodation ladder is very heavy and requires a large number of personnel to assure safe placement. While awaiting rigging of the accommodation ladder, a regular ladder was placed next to the ship and several of the litter patients were lowered to the dolphin with difficulty. The Stokes litters were much more readily passed down than the SAR litters due to the rounded ribs on bottom of the SAR litters.

(2) Recommendations: Explore development of inflatable commercial aircraft-type escape slides modified for / developed for shipboard emergency crew egress and patient evacuation (ambulatory or if placed in a Stokes or SAR litter) to a pier or to small boats. A ladder could be incorporated into the ramp side(s) to allow individuals to climb up to the ship. A floating base platform could provide a stable staging area for boat transfer.

c. Patient Tracking

(1) Discussion: A major interest item for families, medical staffs, and the chain of command was the location and condition of the injured, as well as the uninjured. Tracking efforts were very labor intensive and often required multiple phone calls, faxes, and e-mails to track patient location, plans for continued transit, aircraft types, mission and tail numbers for MEDEVAC aircraft, patient condition, need for accompanying medical devices (i.e. if patients were on litters), etc. There was absolutely no operative system in place that would provide the type of tracking which the commercial sector uses daily to track the status of packages and mail (i.e. If there was any system in place (e.g., "TRACES") it provided absolutely no value to the services, and actually detracted from any support to the services or families by providing a false sense of assurance that a tracking system existed and operated).

(2) Recommendations: DOD should prepare a data form that would be "pushed" from within theater by the sending command and at each stage of their transport to the CINC, TYCOM, BUPERS, etc. DOD should explore commercial services to provide tracking capabilities and reporting of patient movement, plans, condition, etc..

d. Post-Explosion Care by Crew (Training)

(1) Discussion: The medical response by the medical team and the entire crew maximized the opportunity for survival by the wounded from their blast injuries. Effective application of bandages / dressings, patient stabilization, and transport were all effectively conducted under the most trying circumstances. There was no negative impact on treatment of blast injuries due to damage control efforts. The promptness of damage control efforts facilitated the off-ship transfer of patients so they could obtain more extensive care. Due to limited communications and the large number of patients, the crew's capability to provide self and buddy first aid were put to the test. The medical department provided medical training as part of crew indoctrination as well as ongoing, regularly scheduled crew training, and advanced first aid training for Search and Rescue (SAR) swimmers. This was critical as the crew had, as do most ships, approximately 30% annual personnel turnover. Medical training included "GITMO Eight" and CPR

training during INDOC as well as moulaged patients during drills. Two crewmembers also had Emergency Medical Technician training which they had obtained on their own. Actual Sailors (vice mannequins) were used during supervised patient transport drills to provide stretcher-bearers with a realistic load, and to provide the carried Sailor with a realistic perspective. The "GITMO Eight" first aid skills taught to all crewmembers include treating patients with extremity fractures, abdominal evisceration, amputation, jaw fracture, sucking chest wound, electrical shock, burns and smoke inhalation. While no sucking chest wounds or abdominal eviscerations were found among the wounded, crewmembers had to splint extremity fractures and apply bandages to a variety of injuries. Though there was an adequate number of splints aboard, the larger number of extremity fractures in a relatively small area of the ship taxed the supply of splints in the affected area. From the time of the explosion until the brow was placed amidships and the last urgent patient was removed 99 minutes elapsed. This short time directly limited the amount of onboard care provided to each of the patients. For instance, few received IV fluids on board. (Had the ship been at sea, much more substantive care would have been required.) Stretcher-bearers had been assigned for approximately three months. HMC noted that it was difficult to maintain the same personnel in these assignments. Prior to the cruise, he was successful in securing designated personnel that he was able to adequately train. No one observed hesitancy on the part of any crewmembers providing emergency care to the wounded, gainsaying any undue concern over the relatively remote risk of blood borne pathogens in this active duty population. Triage was decentralized ("Spontaneous Response" by virtually all hands) due to communications limitations. Two separate areas of treatment were established at the aft BDS and amidships. Patients were then transported to the amidships quarterdeck where priority of evacuation was determined by HMC. Sick Bay had its doors blown open (doors later reused as stretchers) and the space was trashed. Forward and aft BDS spaces were intact. Both medical storerooms were also intact. Cellular communication with the American Embassy, Aden, Yemen, along with the fortuitous presence of some American physicians at one of the hospitals in Aden facilitated patient transport/care. A small number of patients post-explosion were seen by medical staff and returned to duty. By the second day, a number of less critical patients presented (e.g. ruptured ear drums). One training concern by the CMC, the IDC, and HN was

that they had not received any mass casualty training during HM A school or IDC school. There was also lack of detailed information taught as to how corpsmen had managed mass casualty situations aboard other Navy ships with similar incidents. HN Campbell noted that she had been previously assigned to a clinic where the Officers performed all the triage during drills and the corpsmen only performed administrative support and obtained vital signs .

(2) Recommendations: Continue and reemphasize training using the "Gitmo Eight" aboard all ships, provision of advanced first aid training for SAR swimmers, and additional first aid training for stretcher-bearers. Stress the importance of designating stretcher-bearers that will remain in that position for an extensive period. This will allow adequate training so they can fully support the medical team. Continue to use moulage for casualty care training. Strongly consider increasing the amount of splinting material distributed throughout the ship. Patient transport drills should use actual personnel under close supervision. Incorporate mass casualty training into corps school and IDC training. Recommend to BUMED to assure that triage training drills put corpsmen, a group more likely to go to sea repeatedly, in positions to practice triage.

e. Post-Explosion Care (Supplies and Equipment)

(1) Discussion: Patient transport resources were greatly taxed with Stokes litters and SAR litters being the primary means of transportation. The ship had 11 Stokes litters aboard, as old ones had not been removed. All were used along with the two SAR litters. All members of the medical team condemned Miller boards as being difficult to transport patients with aboard ship, and providing inadequate stability for even moderate weight patients. Several crew recommended reflective material on the patient securing straps on stretchers to facilitate securing the straps in proper sequence in low-light conditions. Only small amounts of intravenous (IV) fluids were used. Dressing materials from Sick Bay, both BDSs, First Aid Boxes (FAB), and both of the ship's Portable Medical Lockers (PMLs), were used by the crew and medical team. Because the metal PMLs had padlocks, crewmembers used axes to access the PMLs. While standard triage tags were used for the deceased, they were not used on evacuated casualties due to the urgency to remove patients to shore ASAP, and the limited time to spend

stabilizing/treating each patient. HMC [redacted] using the working stock of morphine sulfate that was maintained at a level above the standard AMMAL, provided pain control to a number of patients. He withdrew the supply of morphine sulfate from the Sick Bay safe as soon as he realized the scope and extent of the injured. He stated he had fortuitously opened the working stock safe prior to the time of the explosion, but stated it opening the safe typically was not an easy / fast operation. In addition, had he needed additional morphine from bulk supply, he would not have ready access since the bulk stock custodian was performing tasks integral to patient evacuation ashore. Concern for the safety of local blood stores led to 20-30 crewmembers with Type "O ", Rh Factor Negative" (determined from walking blood bank records) being sent to one of the Aden hospitals to donate blood. Standard battle lanterns provided only limited lighting and the batteries only lasted a few hours. Crew, FBI, and many others used at least 14 boxes of non-sterile latex gloves, mostly in the days after the explosion to handle remains and clean-up efforts. Medical team considered the Sun Protection Factor (SPF) 15 sunscreen worthless and, when opportunity presented itself, obtained SPF 30 plus sunscreens from Aden pharmacies. Medical team felt need for there to be a regulator for each of the smaller oxygen tanks (D cylinders) so each could be sent with a separate patient during transport.

(2) Recommendations: Keep both Stokes and SAR litters part of the Authorized Minimal Medical Allowance List (AMMAL). Do not remove any Stokes litters without a one for one replacement with SAR litters or other substitute. Eliminate Miller Boards from the inventory. Assure future stretcher straps incorporate reflective material of differing colors to facilitate securing patients properly. Retain current AMMAL requirement for IV solutions. Maintain the amount of supplies contained in PMLs, but either eliminate locks in favor of easily broken plastic tamper seals and/or change from metal lockers to more easily carried soft containers (e.g. 1500 denier nylon) with handles / back pack carrying straps which could be easily transported through scuttles. The medical team felt there would be an advantage to carrying a voice operated means of documenting medical assessment / medical care provided for each patient (e.g. Digital voice recording devices that could travel with the patient from point of injury). Strongly consider a more readily opened, yet still secure method of safekeeping controlled medicines (e.g., key operated lockbox with keys held

by IDC, XO, CO). Eliminate the requirement for a separate bulk custodian and place all controlled medicinals in the control of the SMDR under existing inventory control procedures. Continue to emphasize need for updated walking blood bank data. Recommend improved battle lantern design (perhaps using halogen bulbs) to provide more lumens and greater duration. Recommend all deploying ships increase the amount of non-sterile latex gloves. Switch AMMAL sunscreen to that with a much higher SPF. Change AMMAL to provide a regulator for each D (small) cylinder oxygen tank.

f. Post-Explosion Augmented Care and Counseling

(1) Discussion: An American Embassy physician came to the ship to assist one day post-explosion. The Fifth Fleet / NAVCENT arranged for a French Surgical Team to transport some of the wounded from Aden to Djibouti within a day of the attack. A Sigonella-based SPRINT / SIRT team consisting of a psychiatrist, family practice physician, and at least two psychiatric technicians and an IDC arrived seven days after the explosion. The team was very well received as a result of their working first with the command leadership (CO, XO, CMC) and advancing to the Department Heads, then to individual shipboard divisions. They remained supportive throughout the duration, intervening as they observed individuals having difficulties, and offering, as did the members of the ship's Medical Department, opportunities to share the trauma of their experience. The team, with the exception of the team leader, LCDR [redacted], departed USS COLE after approximately one week. LCDR [redacted] returned to Norfolk when the crew was debarked. The Fifth Fleet Surgeon, [redacted] also provided assistance as a clinical sick call / care provider. The Fifth Fleet Chaplain arrived several days after the attack and worked to provide counsel to the crew. Subsequent presence of the squadron chaplain, LT [redacted] CHC (who spent nearly three weeks aboard USS COLE that ended just a week prior to the explosion), being very well known to the crew, was particularly appreciated. Additional medical personnel included an IDC from the clinic in Bahrain and an IDC from the USMC FAST company each of who provided care sometime during the post-blast period]

(2) Recommendations: CINCs and Fleets maintain and increase OCONUS liaison work with allied/friendly nations to prepare contingency medical support and medical evacuation in

cases of disaster. BUMED develop a standardized instruction template covering staffing and preparation requirements for SPRINT / SIRT personnel (e.g., passport requirements, camouflage uniforms, wills and power of attorney prepared, bags ready to go with 24 hours notice, pre-prepared orders). DOD and the services should each have web sites detailing psychiatric support teams available from all the uniformed services throughout the world. DOD should develop an instruction for all the services so that a baseline of standards for SPRINT / SIRT type teams exists. During any post-attack period senior authority should press to assure presence of those chaplains who are most well known to the crew.

g. Post-Explosion Public Health / Industrial Hygiene Issues and Concerns

(1) Discussion: The explosion left a significant dusting of powder aboard weather deck surfaces and a residual smell (like fertilizer) on the mess decks as well as in other areas, including the starboard passageway leading to Sick Bay. Smoke curtains helped to contain the smell. The crew did not remove the substance from the weather decks (where personnel slept on account of the heat) because the FBI had not arrived to take samples for testing. 12 fatalities could not be extricated initially due to structural damage in the galley and mess areas. As the temperature exceeded 100 degrees daily, decomposition commenced rapidly. Crewmembers and FBI agents used up supplies of oil of wintergreen and eugenol during recovery efforts in order to minimize the effect of decomposition odors. Vanilla extract was used for the same purpose. While the Navy Environmental and Preventive Medicine Unit SEVEN, Sigonella, Italy did not see a need for USS COLE to start on chemoprophylaxis, concerns over malaria led the Fifth Fleet Surgeon to make the conservative recommendation (reports of malaria cases in Aden, location unspecified) for use of daily doxycycline chemoprophylaxis and primaquine (terminal chemoprophylaxis) for the crew. The crew slept on the weather decks and there was a fair breeze, and fortunately, no reports of mosquito bites. There were no disruptions of the CHT (wastewater) system lines, and no spills. A single commode was on the pier served the entire remaining crew. Linens and bedding could not be cleaned. Preventive Medicine Technicians arrived on ship from other assisting ships within a week after the explosion and provided residual spraying, particularly to

alleviate a fly problem on the mess decks. Air conditioning was restored to selected areas four days after the blast but lack of refrigeration and open damaged areas increased the effects of spoilage of foods along with the decaying of remains not yet safely recoverable. The shipboard potable water system, being dependent on power to brominates water, was not functional. Personnel vigorously consumed bottled water and while no personnel presented to medical with cases of heat exhaustion, two or three did present with readily treated moderate dehydration. The BDSs and Sick Bay gravity-operated emergency water tanks functioned properly. Overall hygiene was greatly challenged by the situation. Several individuals sustained cuts that led to complications and healed poorly. The limited hygiene facilities and lack of hand washing facilities led to increased (non-bloody) incidence of diarrhea (12 cases within the first two days and eventually 70 cases within the first five days). In addition, food provisioned from hotels in Aden was transported to the ship without temperature regulation. This may have led to bacterial incubation. There may have been other cases that did not present to Sick Bay due to more limited illness. Treating diarrhea used up the ship's supply of Ciprofloxacin (antibiotic). Other ships helped replenish USS COLE's supply.

(2) Recommendations: Increase supplies of oil of wintergreen, eugenol and surgical masks for deployers. Increase supply of enteric antibiotics effective against Salmonella and Shigella species. Provide one or two gravity feed, field design lister bags or alternative on the AMMAL to provide means to wash hands if ship's water is out of commission

h. Psychological Stresses and Response

(1) Discussion: In addition to details provided elsewhere, the major post-traumatic difficulty reported by the medical team was difficulty sleeping (~35 to 40 personnel). Dr. [redacted] prescribed Ativan to these personnel for a brief period. Several patients were also given diazepam by HMC for insomnia.

(2) Recommendations: SPRINT / SIRT teams should be prepared to take medication to facilitate sleep for a percentage of any crew they are sent to support.

i. Management and Disposition of USS COLE Deceased

(1) Discussion: The bodies 12 of the 17 killed by the explosion (16 killed at time of explosion, 1 dying later during surgical hospitalization in Aden), could not be removed for transport to the United States on the first day after the explosion due to structural distortions and blast damage making it unsafe or inaccessible for crew members to remove the bodies. The ship had extra body bags aboard at the time of the explosion, a total of nine. Remains were respectfully removed to the helicopter control area aft and, later, to an air-conditioned room in a shack on the pier. Over subsequent days crew members and volunteers from the FBI (arriving two days after the blast) assisted in recovering the remaining bodies. The bodies were transported to the Air Force mortuary facility in Dover, Delaware. The actual location of each remains once they were retrieved, and where they were during their transit to Dover, Delaware, was a topic of high-level interest. Tracking the location of remains during their transit, as well as the tracking of patient location, was dependent on extensive phone calls into the theater, and later, electronic mail communication.

(2) Recommendations: Retrieval of remains worked as well as possible under circumstances that limited access to bodies during the post-blast period. DOD development of a data form that could be sent by the ship or Fleet (dependent on communications availability) as joining reports are during fleet exercises, and sent to CINC, TYCOM, etc. would greatly facilitate providing accurate information of interest to the chain of command, ombudspersons, chaplains, as well as families.

j. Obtaining and Distribution of Lessons Learned

(1) Discussion: Too many after-action medical reports from past shipboard disasters and attacks have limited information, and the appropriate lessons learned do not appear to have been passed on through Corps School, IDC training schools, to medical and physician assistant students in residency training, to dental officers, and others who have the greatest need to be aware of prior historical lessons to learn from.

(2) Recommendations: The enormous value of the experience of the COLE medical team must be passed on to the wide audience of Navy medicine. As classification allows, CNET

Subj: ADDITIONAL COMMENTS ON COLE IMMEDIATE LIFESAVING ACTIONS AND EMERGENCY MEDICAL RESPONSE

assist the members of the medical team of COLE in preparing lessons learned, lectures (which can be video taped and used for varied school house instruction), and VTC presentations. Offer funded opportunities for presentations at large Navy meetings (e.g. NEHC IDC Workshop, United States Naval Institute annual meeting, AMSUS, etc.

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