March, 2010

Surgical response to catastrophe - learning from Canada's experience abroad

Vivian C. McAlister, *University of Western Ontario*

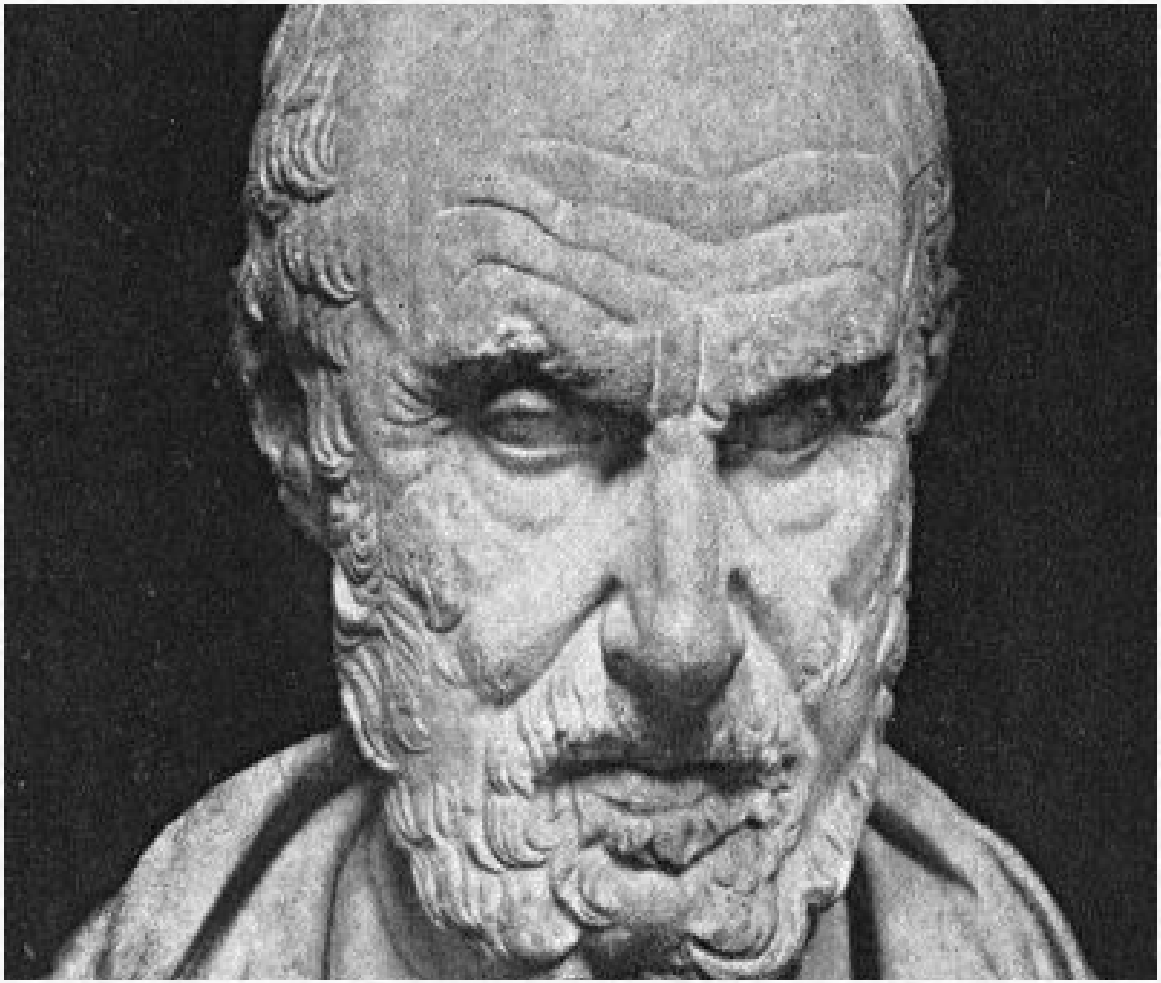
Surgical response to catastrophe - learning from Canada's experience abroad

Vivian McAlister
1 Canadian Field Hospital, Det London;
Dept of Surgery
UWO.

Global Health

Schulich
MEDICINE & DENTISTRY

30 March 2010



HIPPOCRATES (*ca*. 460 BC – *ca.* 370 BC)
British Museum, second or third century B. C.


Fallen
Comrades


1914 1918
IN HONOUR AND MEMORY OF THOSE
WHO SERVED IN THE GREAT WAR
EMBARKATION ROLL 1916 UNIVERSITY OF WESTERN ONTARIO
CANADIAN EXPEDITIONARY FORCE
Nº 10 STATIONARY HOSPITAL
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Nursing Sisters of No. 10 Canadian General Hospital, RCAMC landing at Arromanches, France, July 23, 1944.

M. Scott, *McClure: The China Years of Bob McClure* (1977) and *McClure: Years of Challenge* (1979).

http://archives.cbc.ca/society/religion_spirituality/clips/6023/

Role 3 Multinational Medical Unit, Kandahar Airfield

- 6 general duty physicians or physicians assistants
- 2 surgical teams: 1 general surgeon, 1 orthopaedic surgeon, 1 anaesthetist, 2 nurses, 1 technician
- 1 maxilofacial surgeon
- 1 critical care physician
- 1 psychiatrist
- Radiologist (on-site or teleradiology)


KANDAHAR INSTITUTE of SURGICAL SCIENCE
Steve Bureau
Daniel Lindsay
Bob Ellett
Arie van der Krans
Harry Gelissen
Beth Anne Meunier
Soraya Moghadam
Dave Puskas
Vivian McAlister
Serge
CO Mackay
The A-Team June-August 2007 R3MMU
Kandahar, Afghanistan


CAUTION
240
VOLTS
37
0.42 11 5.5
Alarms
Welch Allyn

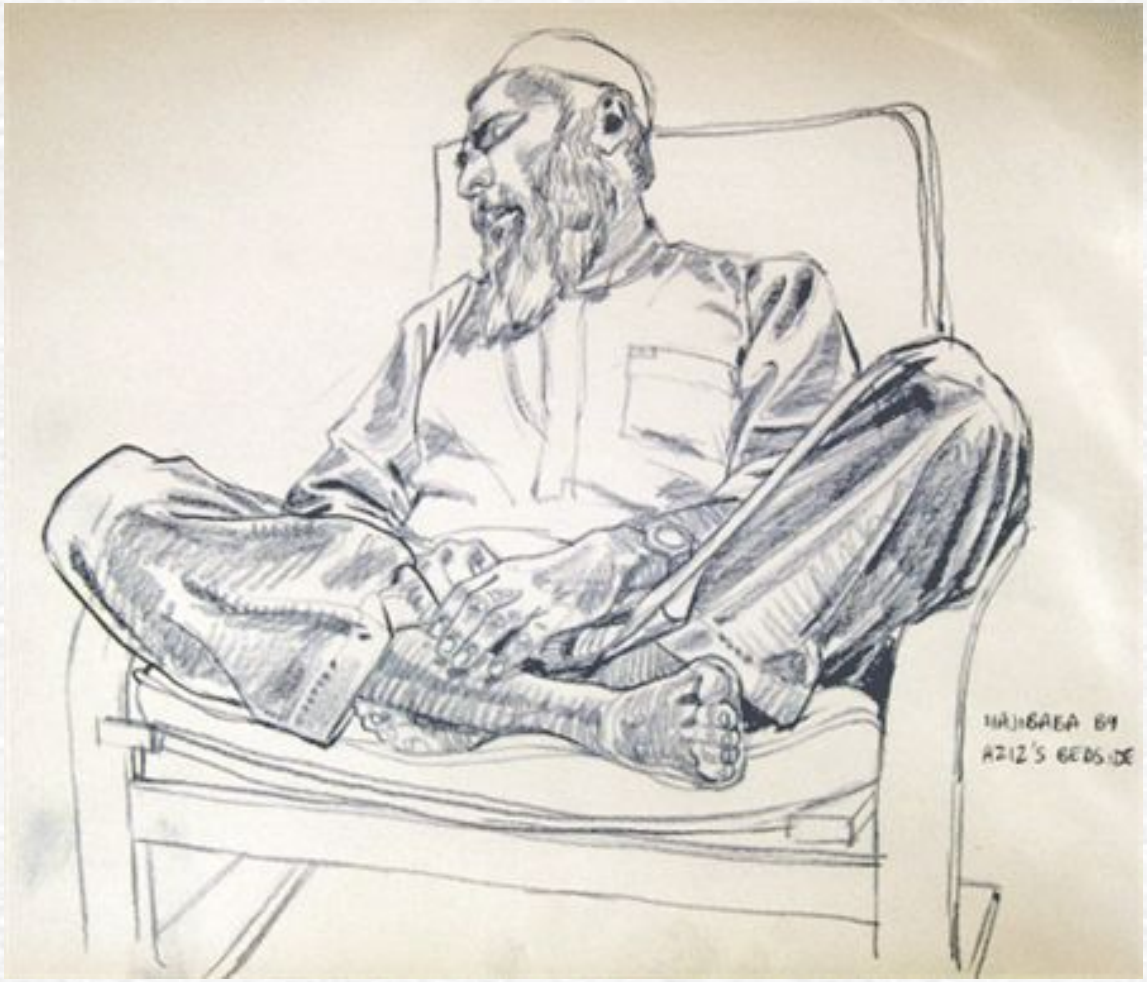

CAUTION
240
VOLTS


OEC


INCINERATOR
CARTON

- 6 year old boy.
- High caliber bullet; entry right buttock / exit below right clavicle.
- Injuries: right colon (X2); small intestine (X2); liver laceration; right lung laceration.
- Initial operations: #1, chest drain; right hemicolectomy; segment small bowel resection; pack liver #2, removal of abdominal packs.
- Problem: recurrent intra-abdominal hemorrhage.


PULL
PUSH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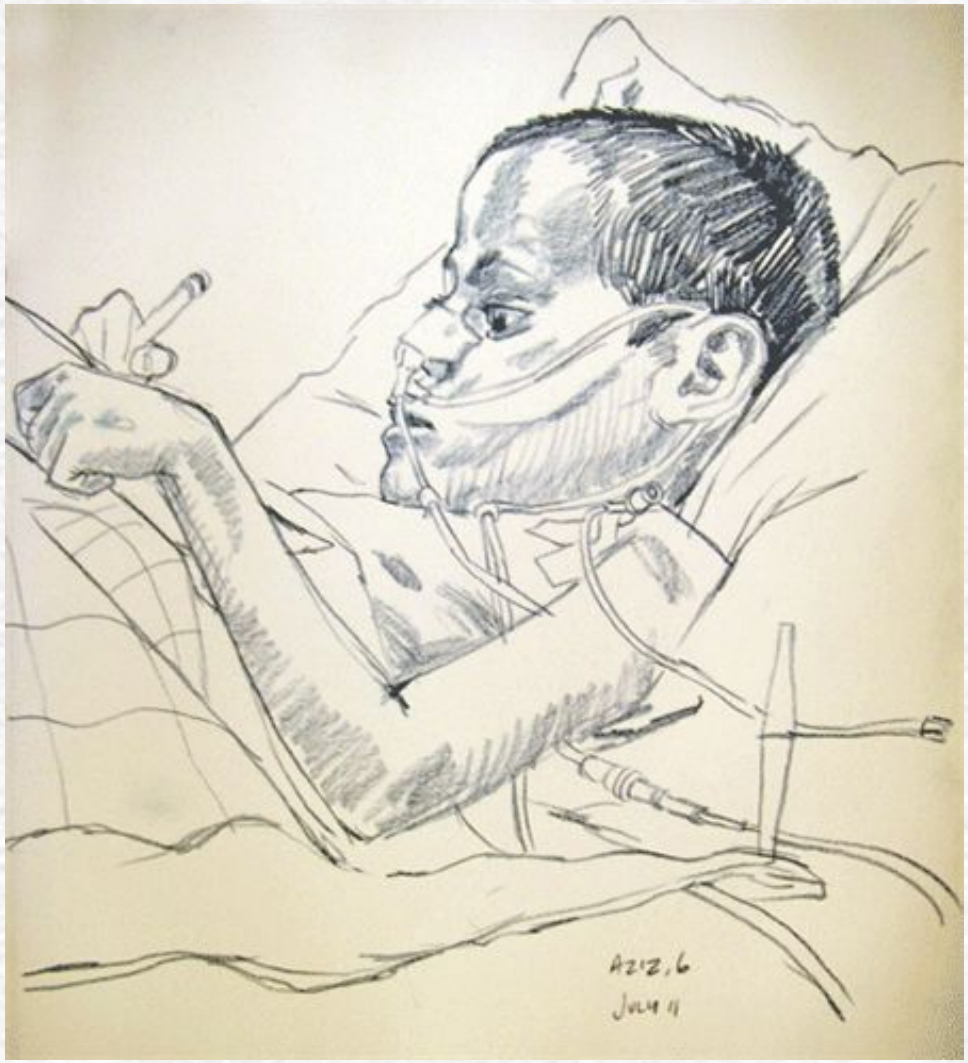
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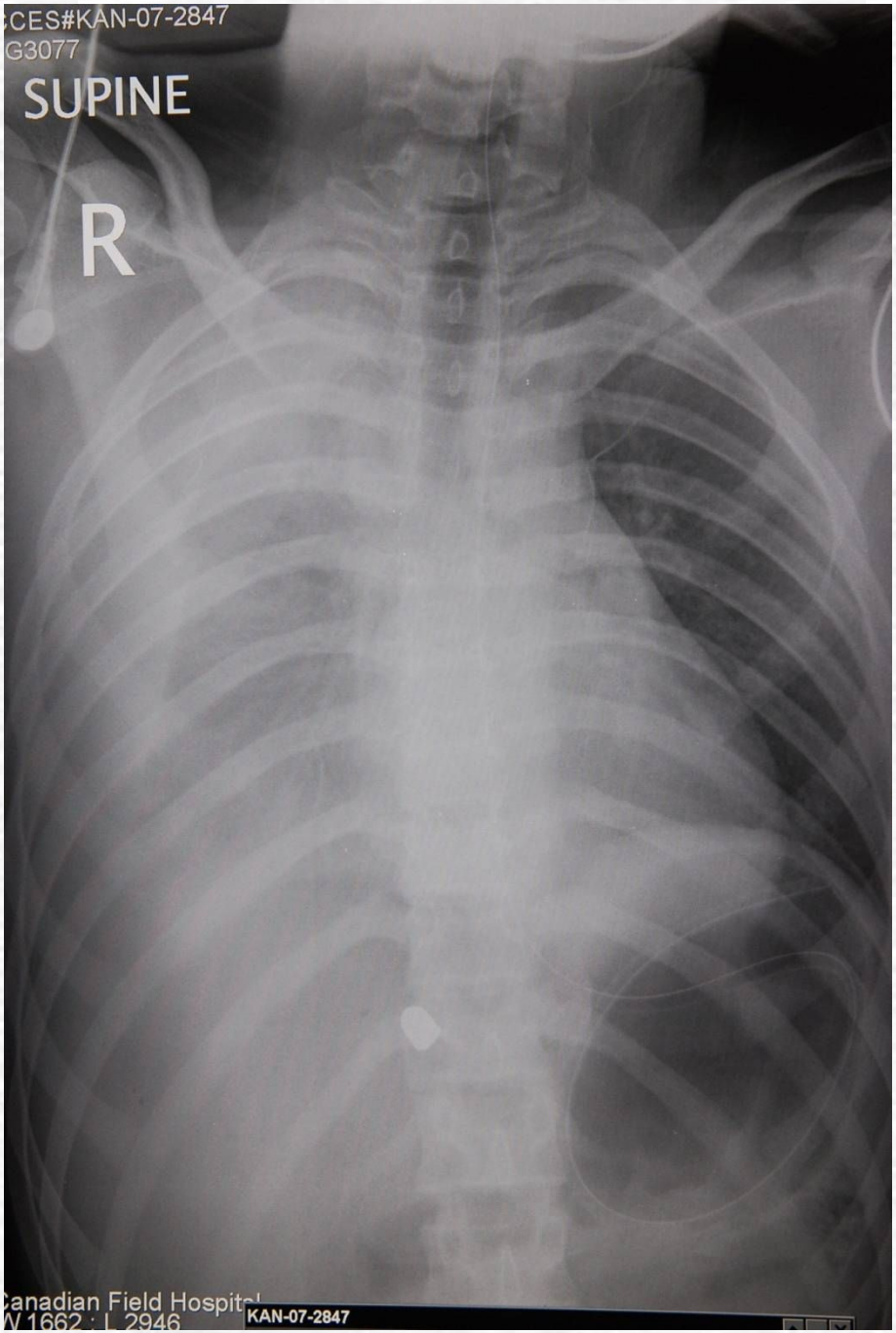
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Circa

In-Theater Peritoneal Dialysis for Combat-Related Renal Failure

Joseph S. Pina, MD, Soraya Moghadam, MD, Howard M. Cushner, MD, Greg J. Beilman, MD, and Vivian C. McAlister, MB

Background: Complications of renal failure may prevent timely evacuation of injured soldiers. Conventional renal replacement therapy is not available in forward surgical units.

Methods: Records of in-theater improvised peritoneal dialysis (IPD) in level III hospitals or forward surgical units in Iraq or Afghanistan were reviewed to determine the following: cause of renal failure and associated injuries; type of dialysate, peritoneal access, and exchange technique; and patient outcome. These data were used to propose method for IPD using commonly available materials.

Results: IPD is described in four patients. Abdominal or chest drains were used with either improvised dextrose–electrolyte solution or commercial dialysate. Exchanges were successful, despite fresh surgical wounds including full laparotomy, removed excess fluid and restored acid and electrolyte balance, but did not correct azotemia. Open abdominal packing prevented continuation of IPD after 48 hours. Two patients fully recovered, one died, and one patient with a poor prognosis was lost to follow-up.

Conclusion: IPD can be delivered effectively using readily available materials in forward surgical units and level III combat support hospitals.

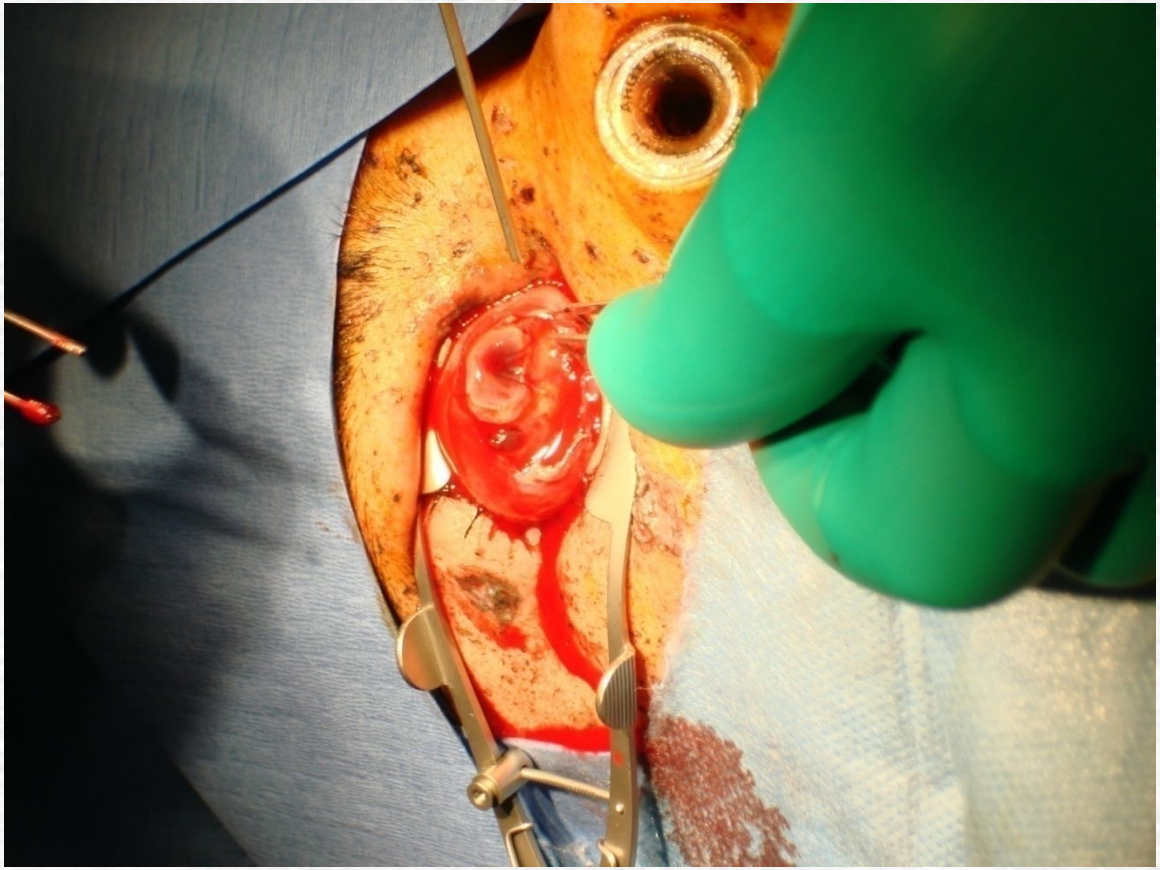
Key Words: Combat-related renal failure, Renal replacement therapy, Peritoneal dialysis.

(*J Trauma*. 2010;XX: 000–000)

sisted of HD or continuous renal replacement therapy (CRRT) and was supplied either on the USNS Comfort or in Landstuhl Regional Medical Center in Germany.[4] Despite the paucity of literature on the use of PD in a combat hospital, PD can be provided easily in a deployed setting since the supplies required to perform this procedure are readily available at combat support hospitals and probably available at FST facilities. Other types of renal replacement therapy, such as CRRT and HD require dialysis filters and blood pumps, which are not part of the field hospital inventory and are difficult to supply in a combat zone. Although treatment of renal failure has progressed considerably in the last 50 years, the problem of dealing with acute renal failure (ARF) in a forward surgical setting has not yet been solved. In this article, we report independent attempts to sustain patients with ARF in the Afghanistan and Iraq theaters of Operations Enduring Freedom, Iraqi Freedom, and the International Security Assistant Force.

Levels of care in the combat theater (also known as echelons of care) are generally aligned with the combat unit the healthcare element is intended to support, i.e. battalions

Eye injury




ALM
ALM
ALM

R3 MMU Sep 07 – Feb 09	OR log
Civilian	689
Afghan military	635
Detainee	48
Coalition military	303
Total	1675

R3 MMU Sep 07 – Feb 09	Mechanism of injury (number of patients)
Improvised explosive device	190
Suicide bomb	210
Rocket propelled grenade	96
Gunshot	198
Other	232

R3 MMU Sep 07 – Feb 09	Procedures
Wound debridement	555
Fracture surgery	414
Laparotomy	176
Vascular repair	50
Craniotomy	74
Maxillo-facial	91
Eye enucleation	16
Amputation (leg)	99
Amputation (arm)	15
Amputation (hand)	16

Lessons

- Native medical services are usually targeted and destroyed in conflict
- NGO voluntary medical support is impossible in conflict
- Military medical services must supply definitive care to the local victims of conflict
- Military medical services cannot replace local routine medical care
- Effective reconstruction of native health care, essential for peace, requires the mentorship and support from military medical services


OPERATING ROOM
#21
CFCU 396
CFFET (1)

Lessons

- Native medical services are often destroyed in natural disasters
- NGO voluntary medical support is often already on the ground
- Disaster response medical services must supply definitive care to the local victims of catastrophe
- Patients with medical problems not due to the catastrophe will request care from disaster responders
- Effective reconstruction of native health care requires prolonged mentorship and support