PATIENTS UNDER FIRE: HELICOPTER TRANSFER IN A DISASTER

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Transfer of critical patients via helicopter is of great advantage and need especially in times of disaster, and should be a part of every major disaster plan

Patients transported by helicopter stood a better chance of survival than those transported by road.

(Thibaut Desmettre, Jean-Michel Yeguiyan, Hervé Coadou, Claude Jacquot, Mathieu Raux, Benoit Vivien, Claude Martin, Claire Bonithon-Kopp, Marc Freysz and French Intensive care Recorded in Severe Trauma. Impact of emergency medical helicopter transport directly to a university hospital trauma center on mortality of severe blunt trauma patients until discharge. Critical Care, (in press))
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Flashpoints: situation in the east coast of Sabah

SANDAKAN
One army battalion is on standby.

LAHAD DATU
Tanjung Belu and Tanjung Labian are still "red zones". Hospital is on standby.

KUNAK
VAT 69 commandos are still hunting for a group of foreign gunmen believed to be hiding there. Most of the shops closed early as no one was coming out of their homes.

SEMPORNA
Commandos were seen getting into boats and heading out to sea in the morning. Later, helicopters were hovering over the towns.

TAWAU
One army battalion is on standby. Schools open as usual.

The Star, March 2013
Temporary evacuation centre

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Ambulances escorted by security forces towards an area where the stand-off with Filipino Sulu gunmen and Malaysian security forces was taking place in Tanduo village. AFP PHOTO / MOHD RASFAN
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6:00pm ➔ 6:30pm

16 y.o., girl; trauma case

MOI: motobike rider vs a moving car, unhelmeted, was thrown into a 3 feet depth dry drain

Brought in unconscious, GCS: E1, V1, M4

BP: 87/50

HR: 126

SpO₂: 98%

Other positive finding, bruises over right flank

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What else we need here?

ULTRASOUND
Bedside ultrasononography has the highest accuracy of all individual findings, ...

In case of suspected intra-abdominal injury, fast transport of the patient to a suitable hospital is of high priority.

DECISION?

1) To keep & ventilate until next morning
2) To send by road without police escort in two ambulances
3) To send immediately by air using undesignated helicopter
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9:00pm ➔ 12:00am

59 y.o. Gentleman, 80 kg bwt
Atrial fibrillation with heart failure
IV Digoxin ~ 111
IVI Dopamine & Dobutamine ~ 110/65
Intubated & Ventilated with SIMV mode
\( V_t \) 560; PEEP 5; \( f \) 12, I:E 1:2, FiO\(_2\) : 1.0 ~ 97-98%
Problem?

OXYGEN SUPPLY

5 tanks of E-cylinder
\[
\frac{\text{Tank capacity (L)}}{\text{Service pressure (psi)}} = \text{Conversion factor}
\]

\[
\frac{\text{Conversion factor} \times \text{psi on gauge}}{\text{Flow rate (L/min)}} = \text{Time left (min)}
\]

O₂ Tank Duration Calculation

\[
\frac{\text{Tank capacity (L)}}{\text{Service pressure (psi)}} = \text{Conversion factor}
\]

Oxygen cylinder size E

680 L / 2200 psi = 0.3
Conversion factor \times \text{psi on gauge} \over \text{Flow rate (L/min)} = \text{Time left (min)}

(0.3 \times 1900 \text{ psi}) \over 10\text{L/min} = 57 \text{ mins}

57 \text{ mins} \times 5 \text{ tanks} = 285 \text{ mins}

4.75 \text{ hours}
1) To send oxygen tank from the nearest hospital (130km) with police escort-in
2) To keep & ventilate until next morning (6-9 hours)
3) To send by road without police escort in two ambulances
4) To send immediately by air using undesignated helicopter
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QUESTION?
CONCLUSION

- Multi-agency cooperation is strongly warranted

- Safety, safety, safety...but in a crisis???


6. Thibaut Desmettre, Jean-Michel Yeguiyan, Hervé Coadou, Claude Jacquot, Mathieu Raux, Benoit Vivien, Claude Martin, Claire Bonithon-Kopp, Marc Freysz and French Intensive care Recorded in Severe Trauma. Impact of emergency medical helicopter transport directly to a university hospital trauma center on mortality of severe blunt trauma patients until discharge. Critical Care, (in press)
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Terima Kasih