Art of EM: Resource Limited Settings

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Part 1

You're a FACEM on-call overnight in a resource-limited Pacific Island Emergency Department, and are called in when an indigenous male in his 50s presents short of breath.

OE: BP 200/70
Severe respiratory distress, unable to talk
Sp02 85% on non-rebreather mask at 15L 02/min
T 35.6
Peripherally mottled
Diffuse inspiratory lung crackles

The x-ray machine is broken, and there is no laboratory testing available overnight.

Q1. What bedside tests could you use for this patient, and why? (6 marks)

Test	Rationale
Focused cardiac ultrasound	Screen for RV impairment as possible evidence of PE, pericardial tamponade necessitating drainage.
Lung ultrasound	Screen for drainable pleural fluid to improve respiratory status, pneumothorax, B-lines as evidence of pulmonary oedema.
ECG	Screen for ischaemia, LVH, RV strain, arrhythmia

Q2. You diagnose acute pulmonary oedema, and there is no ischaemia on the ECG.

What alternate treatments and monitoring are likely to be available in a resource-limited setting for you to use in this scenario, in place of the standard-of-care equivalent in your Australasian ED? (6 marks)

Developed-world equivalent	**Resource-limited treatment**	**Rationale**
GTN IV or sublingual	GTN patch or paste, hydralazine	Preload reduction, and afterload reduction – may reduce the severity of AR

BiPAP	OSA machine with 02 nasal prongs underneath, or assisted BVM breaths with PEEP valve on	Reduced LV afterload, improve LV function, reduce WOB, recruit alveoli, reduce hypoxia
Telemetry	Serial ECG, auscultation/ radial pulse monitoring, observe the Sp02 monitor for irregularity	Screen for arrhythmia

Q3. The patient has a VF arrest. The island you are working on has very limited HDU facilities.

a. **Outline 2 factors that decide the ceiling of care in this situation and which may alter routine ACLS protocol. (2 marks)**

This arrest may be rapidly reversible, with no need for ongoing higher level HDU care, so initial CPR and defibrillation ARE indicated for this in-hospital arrest. Basic airway management with BVM and OPA. Usual simple supportive cares.

Differentiate this from an out-of-hospital arrest – without very early defibrillation by bystanders or ambulance crew, we know the prognosis would be very poor.

However for this patient, this arrest is a prognostic marker of a poor outcome – they clearly have advanced cardiac failure, without access to advanced cardiology treatments. If it takes more than a few minutes to achieve ROSC, your patient will likely have suffered from cerebral hypoxia, there are scarce resources for post-ROSC neuro-protective care – we may have resuscitated someone with the unfortunate outcome of brain-death.

b. **List factors to consider in deciding whether to transfer this patient to your country's central referral hospital for further care? (5 marks)**

Consider
-Exactly what higher level of care is currently available at the central referral hospital
-Your patient's prognosis, and whether a transfer would be prudent use of scarce resources
-Your patients pre-morbid function, and their anticipated post-ICU functional state
-Patient and family's wishes – often a preference for a patient to die at home
-Limited social support for the patient at the central referral hospital, on a distant island
-High cost of transporting a body back to the patient's home island, if they don't survive

Very important to have early family meetings, and be clear about the poor prognosis early.

Consider patient and family's spiritual needs.

Q4. List four steps to take before starting to work with indigenous populations, as a non-indigenous practitioner:

a) Undertake formal training:
   -Annual ACEM Global Emergency Care Workshop & Conference through The Alfred
   - Resource-Limited Critical Care unit through University of Sydney, coordinated by Dr Megan Cox, or a Masters of Public Health, or a Diploma in Tropical Medicine
   -Familiarise yourself with the World Health Assembly Resolution 72.16 (quite an impressive document – it starts with a single sentence that lasts over 2 pages!). In 2019 the assembly called for strengthened provision of emergency care as part of universal health coverage to ensure the timely & effective delivery of life-saving health care services to those in need.
   -Familiarise yourself with Dr Georgina Phillips' recent PhD work establishing Emergency Care priorities & standards regionally in the Pacific.

b) Learn about the social and political history of the country you are working in.

c) Language learning:
   -Medical history-taking is a challenging art even between people of the same language and culture.
   -Even those who make the effort to learn a local language will find that cross-cultural medical communication can be nuanced and fraught, and often leads to inaccurate history-taking, and the patient & clinician misunderstanding either others' priorities.

d) Upskill in certain medical procedures/operations you may be called on to do in isolated environments:
   -Neonatal – umbilical lines
   -Obstetric – tricky deliveries
   -Orthopaedic – all types of reductions
   -Surgical