

Operating Acute Medicine Unit in Bangladesh: Our Experience

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Anam**

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Lead

Acute Medicine and High
Dependency Unit

SQUARE Hospitals Ltd



Disclosure

Nothing to declare

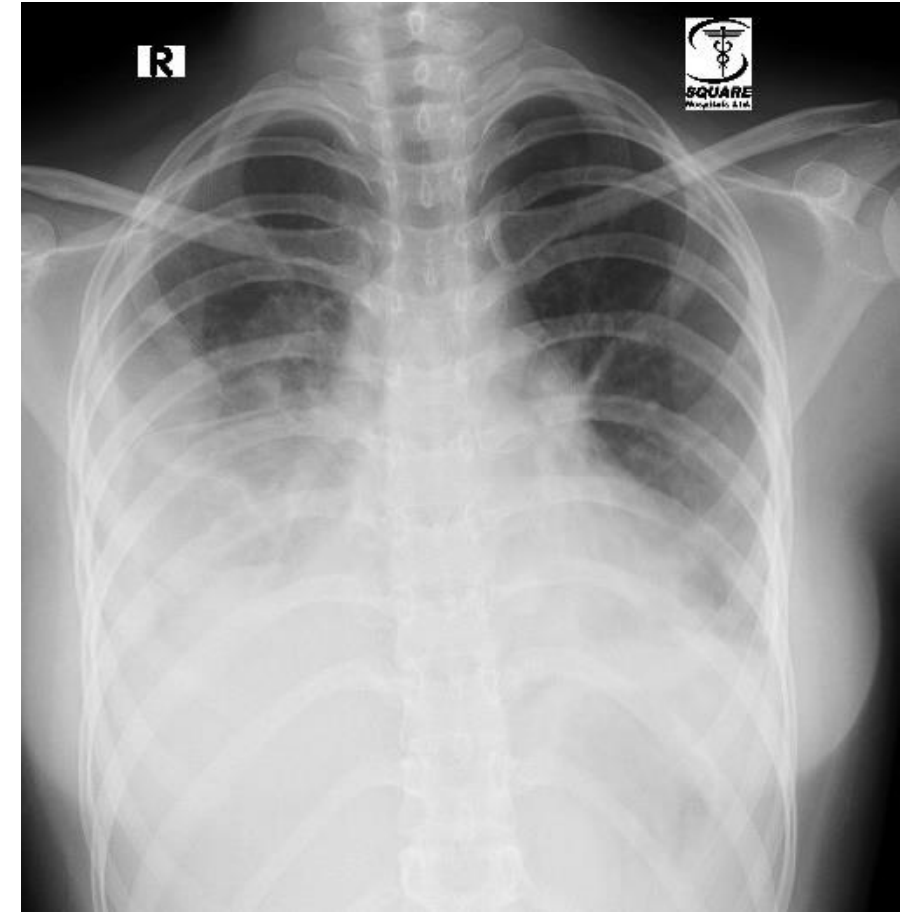
Experience # 1

- 22-year-old lady
- From outside Dhaka - 2 different hospitals
- Painful red lesion at cannula site
- Worsening SOB & productive cough - 5 days
- Gnawing upper abdominal pain - 7 days
- High fever - 16 days
 - Afebrile phase of 7 days till 4 days back
- Recently been treated for DHF



Experience # 1...

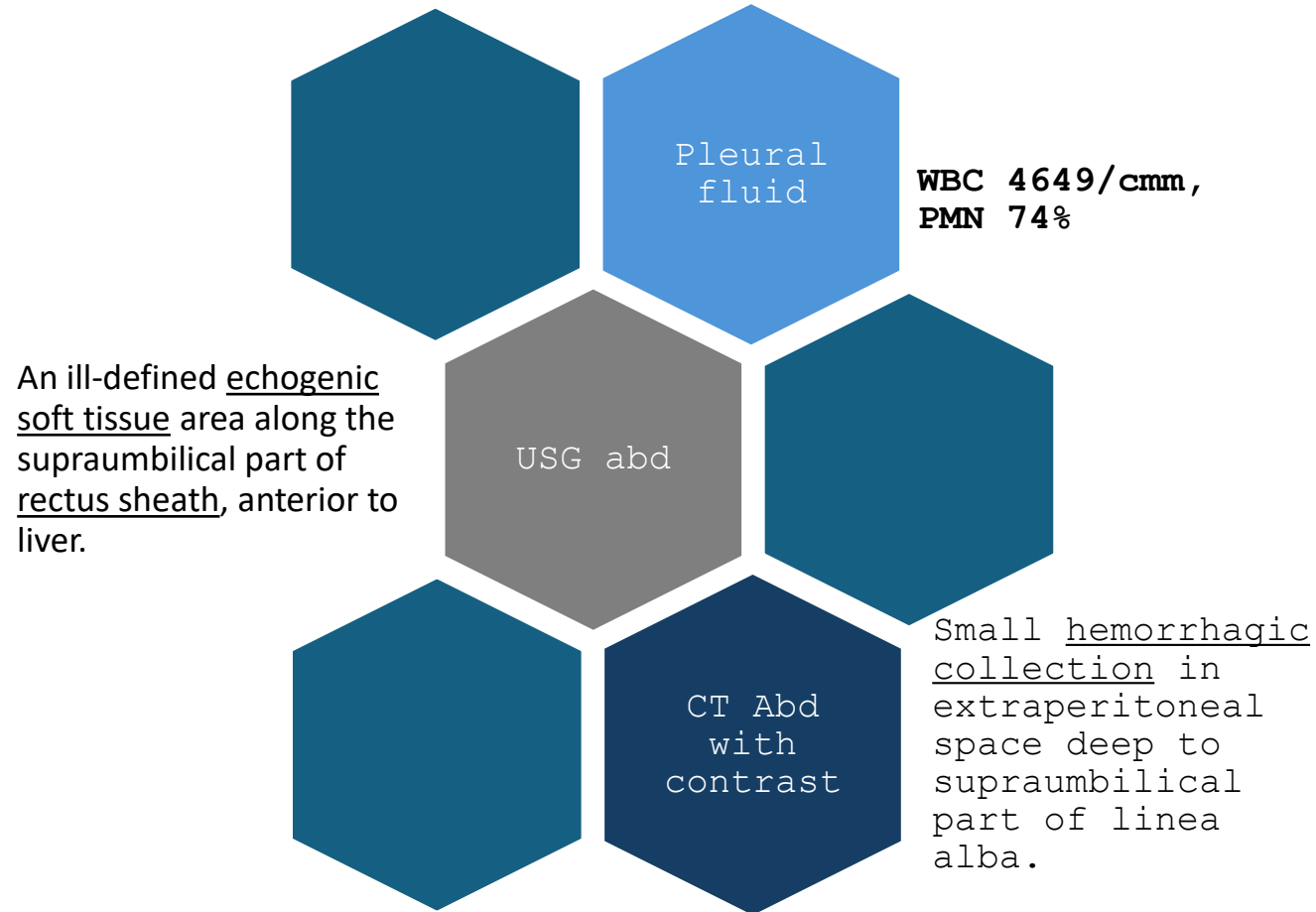
- High fever - 104°F
- HR 122/min, BP 90/60 mmHg
- RR 28/min, Sats 95% with 1L/min O₂
- Tender epigastrium
- Absent breath sound - below rt 7th ICS
- TC 29.4 K/ μ L, ESR 119 mm, CRP 241.9 mg/L, PCT 0.37 ng/mL
- Hb 8.4 g/dL, Plt 449 K/ μ L



Experience # 1...

- Possibilities
 - High fever – Second peak of DHF
 - Thrombophlebitis
 - SOB – DHF induced pleural effusion
 - Abd pain – ?PUD, ?pancreatitis (excluded)
- Was on Linezolid – soft tissue infection with GPC

Experience # 1...



- Sputum C/S
 - *Staph. Aureus* - profuse
 - *Candida* (non-albicans) - moderate



Experience # 1...

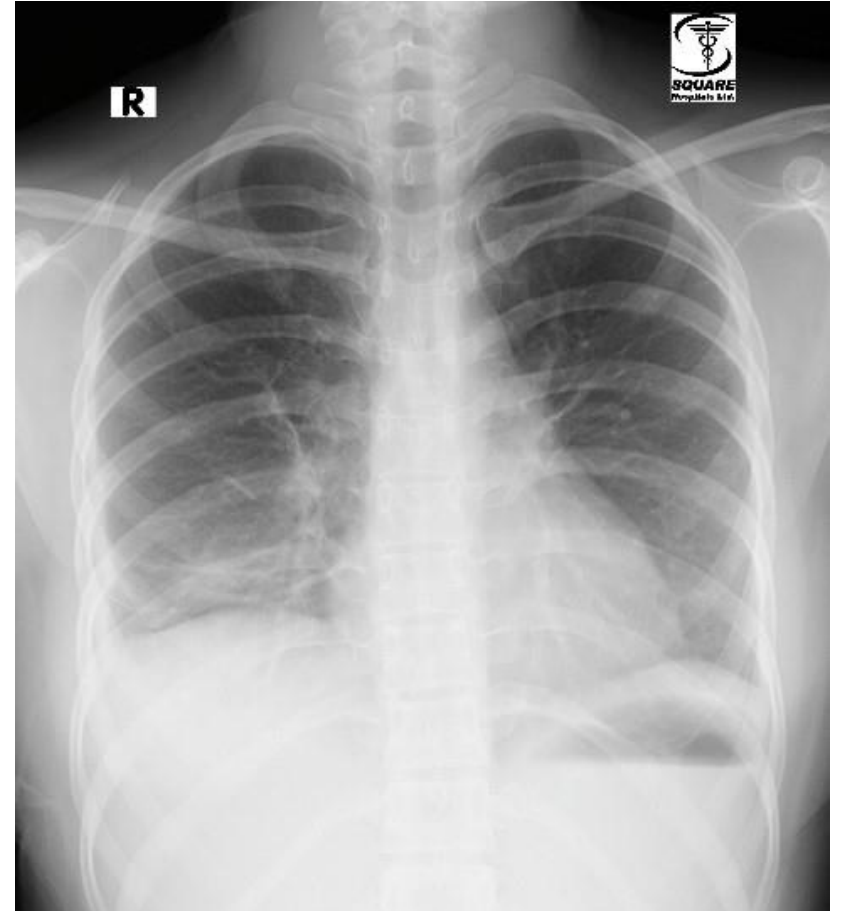
Transfusion of blood product

Linezolid - IV to Oral

Voriconazole - IV to Oral

Simple analgesia & reassurance for the abdominal pain

Discharged home from AMU after 3 days



Experience # 2

- 27-year-old lady
- Recurrent vomiting – 2 days
- Worsening headache – 1 day
- Diminishing vision – few hours
- Drowsy
- No h/o head injury, fever, unconsciousness or seizures
- No known comorbidity

Experience # 2...

- Drowsy, but rousable
- Agitated
- BP 100/60 mmHg, HR 100/min
- Other vitals - stable
- No neck rigidity, Kernig's sign (-)

A friend disclosed

- Smoker, alcoholic & other substance abuser
- **H/O ingestion of alcohol 2 days back**

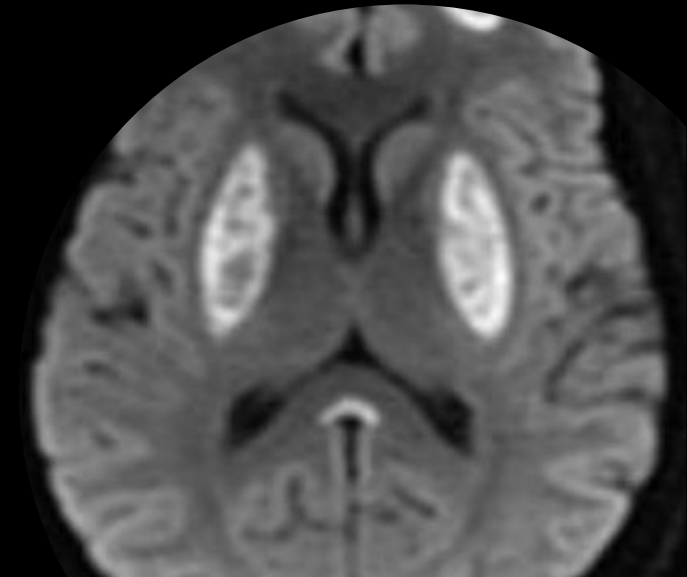
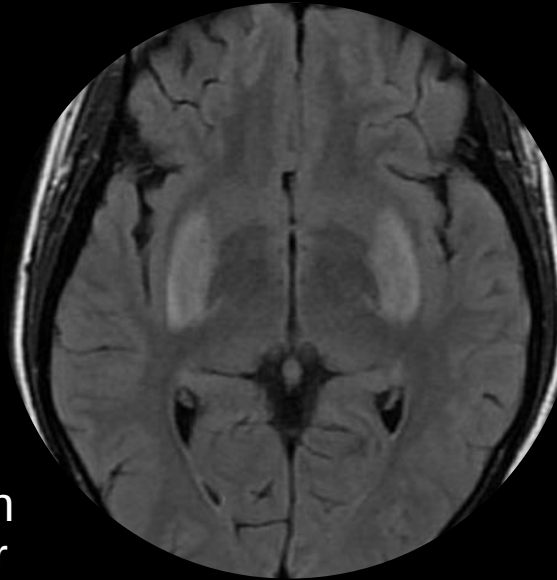
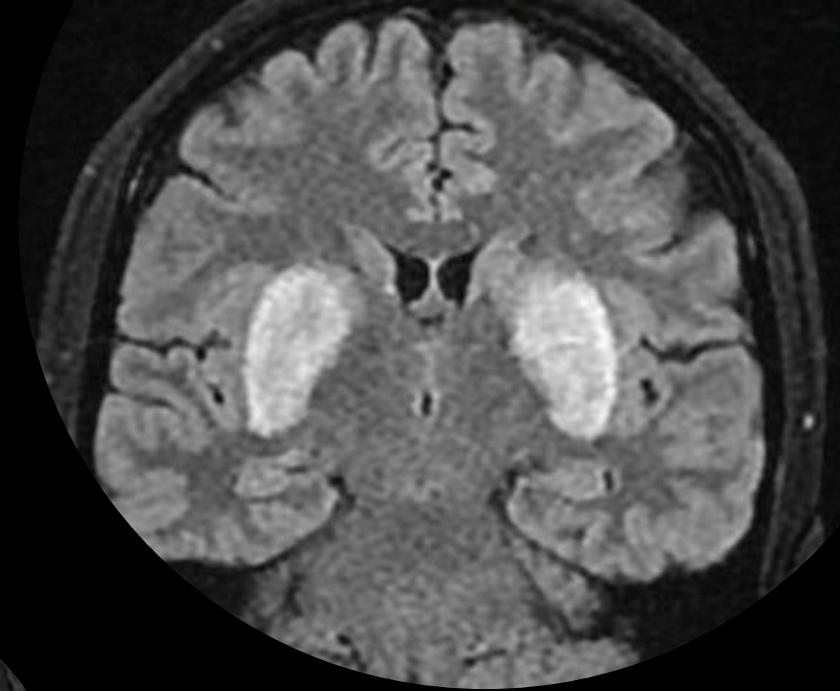
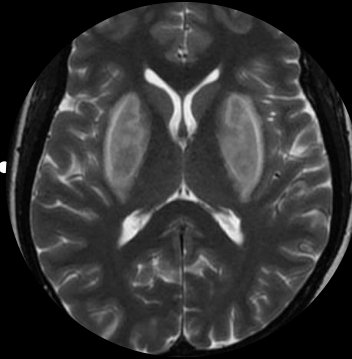
Experience # 2.

- High anion gap metabolic acidosis

- Na 148 mmol/L
- K 2.9 mmol/L
- Cl 114 mmol/L
- TCO2 **9 mmol/L**

- MRI of brain:

- bilateral symmetrical diffusion restriction in basal ganglia and subcortical white matter of frontal lobes with haemorrhage in basal ganglia. Acute infarct in right temporal lobe and corpus callosum.



Experience # 2...

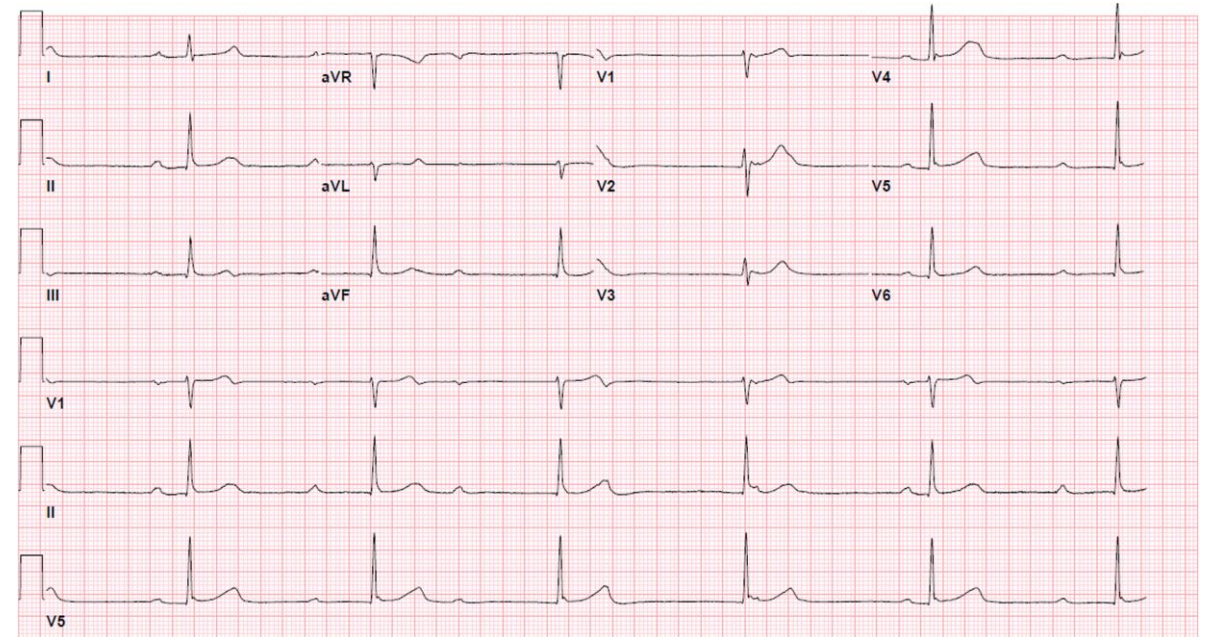
- Methanol Poisoning Intoxication
- Optic Neuropathy
- Immediate HD
- Folinic acid
- High dose Methylprednisolone
- Acidosis corrected
- Shifted to cabin on day 3
- Vision deteriorated
- Lost to follow-up

Experience # 3

- 42-year-old businessman
- Dyslipidaemia - on Rosuvastatin
- Vomiting - 3 times
- Restlessness, extreme weakness & tremor
- Blurring vision
- Loss of consciousness & fall
- Was home alone - rescued by a friend after breaking the door

Experience # 3...

- At ER
 - GCS E₃V₃M₅
 - HR 37/min, regular
 - BP 80/40 mmHg
 - Grossly dehydrated
- Bolus fluids & Atropine – sent to AMU



Experience # 3...

- At AMU
 - GCS 15
 - HR – fluctuating initially, then stable from ~6 hours after admission
 - BP – 80/60 mmHg – improved with bolus NS
 - No respiratory event, Sats 98% in RA, **Chest clear**
- All labs & ECG – initially – sinus bradycardia, later – normal

Experience # 3...

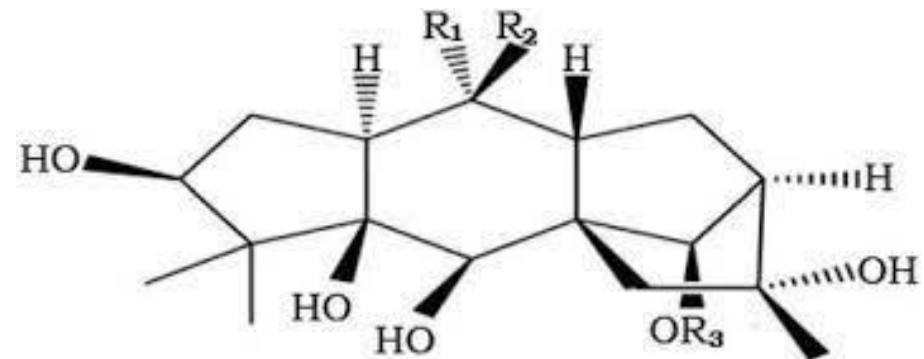
- Differentials?
 - Organophosphates
 - Alcohol
 - Cardiac events
- Other substance.....?

Important history

- Ingestion of
**"special indigenous
honey"**
brought from Nepal
– 5 t.s.f.

Experience # 3...

- Our NEW KNOWLEDGE
 - Honey from nectar & pollen of Rhododendron
 - Grayanotoxin I & III
 - M₂ receptor
 - All features of OPC poisoning except the respiratory components
 - Potentially fatal - if not treated early cardiac problems
 - Self limiting after 6 - 12 hours



.....
.....
.....
.....
Experience #
3



Explained & reassured
Discharged from AMU next day

A close-up photograph of two hands, palms up, holding a bright, glowing orb of light. The orb is surrounded by numerous small, sparkling particles that float in the air, creating a magical and ethereal atmosphere. The background is a soft, out-of-focus gradient of warm colors, suggesting a sunset or sunrise. The text is overlaid on the lower half of the image in a white, monospace-style font.

Quick & thorough assessment
Immediate & appropriate
management

Acute Medicine

- “Acute internal medicine (AIM) is defined as that **part of general internal medicine** concerned with the **immediate and early specialist management** of adult patients suffering from a **wide range of medical conditions** who present to, or from within hospitals, requiring **urgent care**”

Royal College of Physicians. Acute Medical Care. The right person, in the right setting - first time.

Report of the Acute Medicine Task Force. London: RCP, 2007

Acute Medicine Unit

- “A **dedicated facility** within a hospital that acts as the **focus for acute medical care** for patients who have presented as medical emergencies to hospital”

Royal College of Physicians. Acute Medical Care. The right person, in the right setting – first time.

Report of the Acute Medicine Task Force. London: RCP, 2007

Acute Medicine: why developed?

- In response to
 - **Increasing number of acute medical admissions**
 - **Reduced bed capacity**
- To provide
 - **Best quality care to acutely ill patients**

Acute Medicine: Target

- Specialist led
- To treat severely ill patients with acute medical conditions
- Discharge home or transfer to specialized unit
 - within 24 – 72 hours

Acute Medicine: Outcome

- Lower inpatient mortality
- Shortened hospital stays
- Reduced hospital readmission
- Improved patient and staff satisfaction

AIM: history

- 1998: RCPE & RCPSG – reported on “dedicated areas for acutely ill” [*The Future of General Medicine and Acute Medical Admissions*]
- 2000: Working force report – concurring with previous. SAM formed
- 2003: Recognised by the Specialist Training Authority as a subspecialty of GIM
- 2009: Became separate speciality (GMC)
- 2012: Dutch Acute Medicine (DAM)

AIM & AMUS: throughout
the world





Acute Medicine: Bangladesh perspective

- Statistical Yearbook of Bangladesh 2021 & MOHFW
 - 3.6 doctors / 10,000 population
 - 5.53 beds / 10,000 population
 - 219 : 1 ICU beds

• Acute Medicine is strongly & immediately needed

2.	Urethral/ bladder catheterization
3.	Bed side urine test
4.	Ultra sound of KUB
5.	Renal biopsy
6.	Hemo dialysis
7.	Peritoneal dialysis
Rheumatology and Bone Disease	
1.	Joint aspiration &/ or intra-articular injection
Infectious and Tropical diseases	
1.	Temperature chart
2.	Collection of blood, urine, pus sample for culture
Poisoning & Envenomation	
1.	20-minute whole blood clotting test
Acute Medicine and Critical illness	
1.	Endotracheal intubation
2.	Extubation
3.	Continuous positive pressure ventilation
4.	Non-invasive ventilation/ CPAP, BiPAP
5.	Intermittent positive pressure ventilation
6.	Arterial puncture
7.	Central venous cannulation
Medical psychiatry	
1.	Electroconvulsive therapy
2.	General psychotherapy
3.	Cognitive therapy
4.	Behavior therapy
Medical Oncology	
1.	Systemic chemotherapy
2.	Hormone therapy
3.	Immunotherapy
Palliative Medicine	
1.	Assessment of severity of pain
2.	Family meeting
3.	End of life care planning with the patient's family
Dermatology	
1.	Cryosurgery
2.	Dermoscopy
3.	PUVA





ACUTE MEDICINE

DIVISION OF

DEPARTMENT OF MEDICINE

Chief Patron:
Prof. Khan Abul Kalam Azad
Principal, Dhaka Medical College.

Chief Managing Advisor:
Brig. General AKM Nasir Uddin
Director, Dhaka Medical College Hospital

Chief executive Advisor:
Prof. Md. Mujibur Rahman
Head of Dept. of Medicine.

Head of Division:
Prof. Ahmedul Kabir

Co-Ordinator:
Asso. Prof. Mohammad Mured Hossain

Advisor:
Prof. Shaymal Sarker
Prof. S.M. Hafiz Sardar
Prof. Md. Jitu Miah
Prof. M.A Kashem
Asso. Prof. Dr. Md. Robed Amin
Asso. Prof. Dr. Md. Motlabur Rahman
Asso. Prof. Dr. Partha Pratim Das

Focal Person:
Dr. Ragib Ahsan
Dr. S.M. Rashedul Hasan (Rashed)
Dr. Tonmoy Dey
Dr. Dipankar Ghosh

5.6 Training component in each block	
Block 3.1	
-	Medicine: 14 weeks
-	Cardiology: 6 weeks
-	Gastroenterology (2 weeks) & Hepatology (2 weeks): 4 weeks
-	Hematology: 2 weeks
Block 3.2	
-	Medicine: 15 weeks
-	Respiratory Medicine: 6 weeks
-	Rheumatology: 3 weeks
-	Dermatology: 2 weeks
Block 4.1	
-	Medicine: 16 weeks
-	Nephrology: 4 weeks
-	Psychiatry: 3 weeks
-	Endocrinology: 2 weeks
Block 4.2	
-	Medicine: 18 weeks
-	Neurology: 6 weeks
-	Medical oncology: 2 weeks
Block 5.1	
-	Medicine: 18 weeks
-	Palliative medicine: 2 weeks
-	Acute medicine / CCM/ICU: 6 weeks
Block 5.2	
-	Medicine: 24 weeks
-	Exam preparation: 2 weeks
5.7 Standards for Training	
Specialist have to offer their service in diverse situations and circumstances, unpredictable clinical scenarios, take decisions under pressure and many a time in the absence of adequate information. They exercise professional judgment, insight and leadership skills.	
BCPS 2020	
FCPS Internal Medicine SST Curriculum	



£15m acute medical unit welcomes first patients at Russells Hall Hospital | Express & Star

Visit >



Hospital opens up new acute unit | dartmouth-today.co.uk

Visit >

New acute medical unit opened at George Eliot

The 41-bed ward will be used to assess patients from A&E for discharge for further treatment within the community or to be transferred for specialist services at the hospital

By Hinckley Times
19.11.19 (Nov 2019)





15-Oct-
2022

Cases for Acute Medicine

SHOCK

- a. HYPOVOLEMIC
- b. HEMORRHAGIC
- c. SEPTIC

SYNCOPE/COLLAPSE

- a. ARRHYTHMIAS - TACHY/BRADY/AF

ANAPHYLAXIS, URTICARIA & ANGIOEDEMA

TRANSFUSION REACTION

CHEST PAIN

- a. ACUTE NSTEMI
- b. PERICARDITIS
- c. PLEURITIC CHEST PAIN

SHORTNESS OF BREATH

- a. ACUTE PULMONARY OEDEMA/VOLUME OVERLOAD
- b. ACUTE SEVERE ASTHMA
- c. INFECTIVE EXACERBATION OF COPD
- d. PNEUMONIA - COMMUNITY & HOSPITAL ACQUIRED
- e. PNEUMOTHORAX
- f. PLEURAL EFFUSION

UNCONTROLLED HYPERTENSION

- a. HYPERTENSIVE URGENCIES
- b. HYPERTENSIVE EMERGENCIES

ACUTE ABDOMEN (NON-SURGICAL)

- a. ACUTE UPPER GI BLEEDING
 - i. PUD
 - ii. VARICEAL BLEED
- b. ACUTE GASTROENTERITIS
- c. ACUTE PANCREATITIS

HEPATIC ENCEPHALOPATHY

ACUTE KIDNEY INJURY/ACUTE-ON-CHRONIC KIDNEY DISEASE

METABOLIC & ELECTROLYTE IMBALANCE

- a. METABOLIC ACIDOSIS
- b. HYPER/HYPOKALEMIA
- c. HYPER/HYPONATREMIA
- d. HYPER/HYPOCALCEMIA
- e. HYPER/HYPOMAGNESEAEMIA
- f. DIABETIC KETOACIDOSIS (DKA)
- g. HYPERGLYCEMIC HYPEROSMOLAR STATE (HHS)

DRUG OVERDOSE/POISONING

ACUTE DELIRIUM

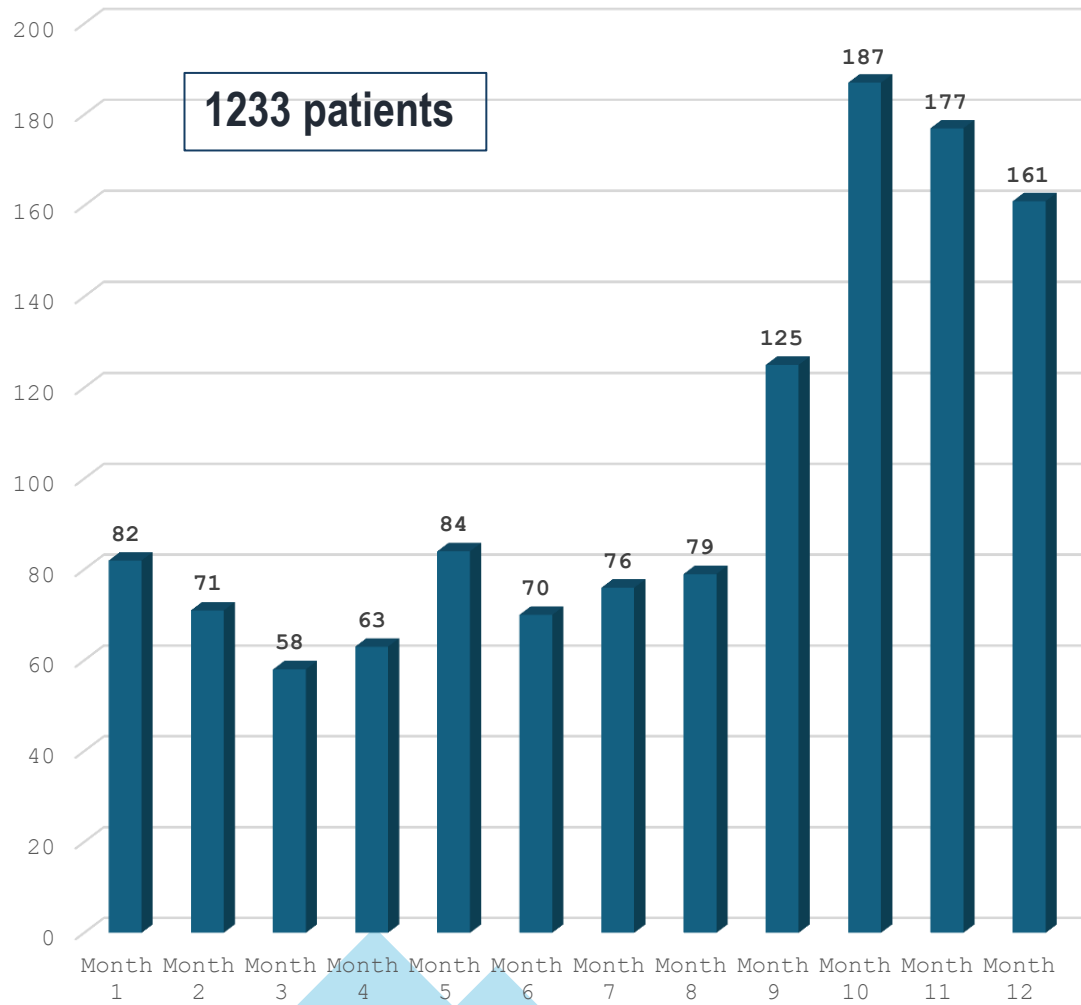
ACUTE ARTHRITIS

- a. SEPTIC
- b. HEMORRHAGIC

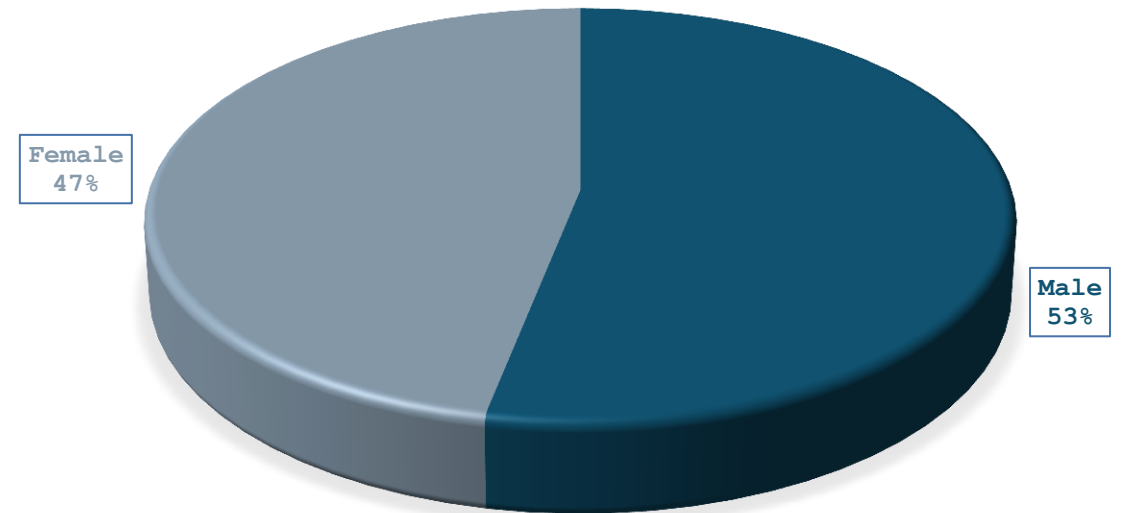
ANY OTHER MEDICAL PATIENTS - ACCORDING TO THE ADVICE OF
RESPECTIVE SPECIALIST/CONSULTANT

Any other surgical or gynecological patients - according to the advice of respective specialist/consultant

Acute Medicine in SHL (15-Oct-2022 to 15-Oct-2023)



GENDER RATIO



- Bedside monitoring tools

NEWS2©Royal College of Physicians 2017 (Modified for Square Hospitals Ltd, by Dr. Ahmad Mursel Anam, Assoc. Cons & lead, AM&H DU)

Difference from other areas

- Bedside investigating tools
 - Bedside US
 - ABG

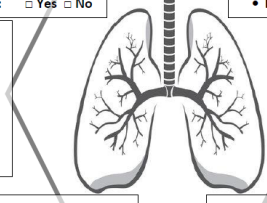
 Bedside Acute Medicine Ultrasound & Echo
Department of Acute Medicine & HDU
Square Hospitals Ltd
Dhaka, Bangladesh

Bedside lung ultrasound for respiratory distress

Right Upper Anterior	Left Upper Anterior
• Lung sliding: ☐ Yes ☐ No	• Lung sliding: ☐ Yes ☐ No
• A-Lines: ☐ Yes ☐ No	• A-Lines: ☐ Yes ☐ No
• B-Lines: ☐ Yes ☐ No	• B-Lines: ☐ Yes ☐ No
• Effusion: ☐ Yes ☐ No	• Effusion: ☐ Yes ☐ No
• Consolidation: ☐ Yes ☐ No	• Consolidation: ☐ Yes ☐ No
• Collapse: ☐ Yes ☐ No	• Collapse: ☐ Yes ☐ No
• Lung Point: ☐ Yes ☐ No	• Lung Point: ☐ Yes ☐ No

Right Lower Anterior	Left Lower Anterior
• Lung sliding: ☐ Yes ☐ No	• Lung sliding: ☐ Yes ☐ No
• A-Lines: ☐ Yes ☐ No	• A-Lines: ☐ Yes ☐ No
• B-Lines: ☐ Yes ☐ No	• B-Lines: ☐ Yes ☐ No
• Effusion: ☐ Yes ☐ No	• Effusion: ☐ Yes ☐ No
• Consolidation: ☐ Yes ☐ No	• Consolidation: ☐ Yes ☐ No
• Collapse: ☐ Yes ☐ No	• Collapse: ☐ Yes ☐ No
• Lung Point: ☐ Yes ☐ No	• Lung Point: ☐ Yes ☐ No

Right Postero-lateral	Left Postero-lateral
• Lung sliding: ☐ Yes ☐ No	• Lung sliding: ☐ Yes ☐ No
• A-Lines: ☐ Yes ☐ No	• A-Lines: ☐ Yes ☐ No
• B-Lines: ☐ Yes ☐ No	• B-Lines: ☐ Yes ☐ No
• Effusion: ☐ Yes ☐ No	• Effusion: ☐ Yes ☐ No
• Consolidation: ☐ Yes ☐ No	• Consolidation: ☐ Yes ☐ No
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• Lung Point: ☐ Yes ☐ No	• Lung Point: ☐ Yes ☐ No



Impression:

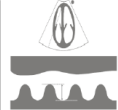
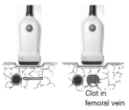
Bedside measurement of Inferior Vena Cava diameter (during spontaneous breathing) variation for shock

Maximum (expiratory) IVC diameter: mm
Minimum (inspiratory) IVC diameter: mm
IVC Collapsibility Index (CI): %

 IVC Collapsibility Index = $\frac{\text{maximum (expiratory) diameter} - \text{minimal (inspiratory) diameter}}{\text{maximum (expiratory) diameter}} \times 100$

Impression: ☐ Volume Responsive (CI >50%) ☐ Volume Non-Responsive (CI <50%)

Bedside echocardiography for shock	Bedside lower limb doppler US for DVT
Impression: ☐ Cardiac tamponade ☐ Poor LV function ☐ Dilated RV/RA (PE)	Impression: ☐ Absent ☐ Visible thrombus ☐ R ☐ L ☐ Non-compressible ☐ R ☐ L

Final impression:

Performed by: _____ Date: _____ Time: _____

Difference from other areas

	Standard Operating Procedure	Name of the Department: Acute Medicine & High Dependency Unit
Title: VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT AND PREVENTIVE MEASURES		
Doc No: SHL-MP-AM&H DU-000	Date of Original Issue:	Date of <u>Amendment</u> :
Originator/ Proposed by: Ahmad Mursal Asam Acute Medicine & High Dependency Unit	Reviewed by: Academic and protocol committee	Approved <u>by</u> :

Introduction:

Venous Thromboembolism VTE is a potential limb and life threatening condition in which a blood clot (a thrombus) forms in a vein. It most commonly occurs in the deep veins of the legs; this is called deep vein thrombosis. The thrombus may dislodge from its site of origin to travel in the blood – a phenomenon called embolism.

All patients admitted to hospital with acute or critical medical illness, requiring more than 3 days bed rest, major trauma or major surgery (duration of operation greater than 30 minutes) should be individually assessed for risk of VTE (venous thromboembolism) and given appropriate VTE prophylaxis.

Aim:

To ensure all patients admitted to Square Hospitals Ltd. are assessed for risk of VTE and prescribed appropriate thromboprophylaxis.

Scope:

All in-patients should be risk assessed and appropriate prophylaxis prescribed.

Risk Assessment and Appropriate Thromboprophylaxis Measures:

General Measure for All Patients:

- Do not allow patients to become dehydrated unless clinically indicated
- Encourage patients to mobilize as soon as possible

Page 1

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PART 1: Consider Risk Factor for VTE

- Age >60 Years
- Active Cancer
- Thrombophilia
- Obesity (BMI ≥30)
- Chronic Inflammatory State (e.g. Heart Failure, IBS, HIV)
- Varicose Veins
- Prolonged Immobility/Fracture
- Pregnancy / Hormone therapy
- Past / Family history of VTE
- Recent surgery/hospitalization
- Presence of CV Line

If YES to any of the above

If NO RISK FACTOR – Consider DVT Compression Stockings*

PART 2: Consider Contraindications to VTE Treatment / Bleeding Risk

- Platelet < 50 K/μL
- Uncontrolled Hypertension
- Advanced Liver Disease
- Ongoing Treatment for Acute Coronary Syndrome
- Known/suspected Bleeding
- CNS surgery in <1 month
- On antithrombotic Medication
- Acute stroke / intracranial bleed
- Coagulopathy
- Cerebral Metastases
- Awaiting Lumbar Puncture
- History of Heparin Induced Thrombocytopenia (HIT)

If NO Contraindications

ANY CONTRAINDICATION – Consider ONLY DVT Compression Stockings*

*CONTRAINDICATIONS TO DVT COMPRESSION STOCKINGS:

- Massive leg edema
- Pulmonary edema
- Severe peripheral arterial disease
- Major leg deformity
- Peripheral neuropathy
- Active dermatitis

PART 3: Check Creatinine Clearance, Platelet Count & Weight for Appropriate VTE Prophylactic Measure

Creatinine Clearance (ml/min)	Platelet Count (K/μL)	Weight (Kg)	Medication
>30	>50	40 - 80	Inj. ENOXAPARIN 40 units s/c Once Daily
>30	>50	>80	Inj. ENOXAPARIN 60 units s/c Once Daily
>20	<50	Any	Inj. FONDAPARINUX 2.5 units s/c Once Daily
<20	Any	50 - 100	Inj. DALTEPARIN 5000 units s/c Once Daily
<20	Any	>100	Inj. DALTEPARIN 7500 units s/c Once Daily
<10	Any	Any	Inj. Heparin 5000 units s/c Twice Daily or Consider <u>ONLY DVT Compression Stockings*</u>
Any	<20	Any	Consider <u>ONLY DVT Compression Stockings*</u>

Page 2

	Standard Operating Procedure	Name of the Department: Acute Medicine & High Dependency Unit
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Originator/ Proposed by: Ahmad Mursal Asam Acute Medicine & High Dependency Unit	Reviewed by: Academic and protocol committee	Approved <u>by</u> :

During Hospital stay:

- Reassess risks of Bleeding and VTE -
 - Every 24 hours.
 - Whenever clinical situation changes.

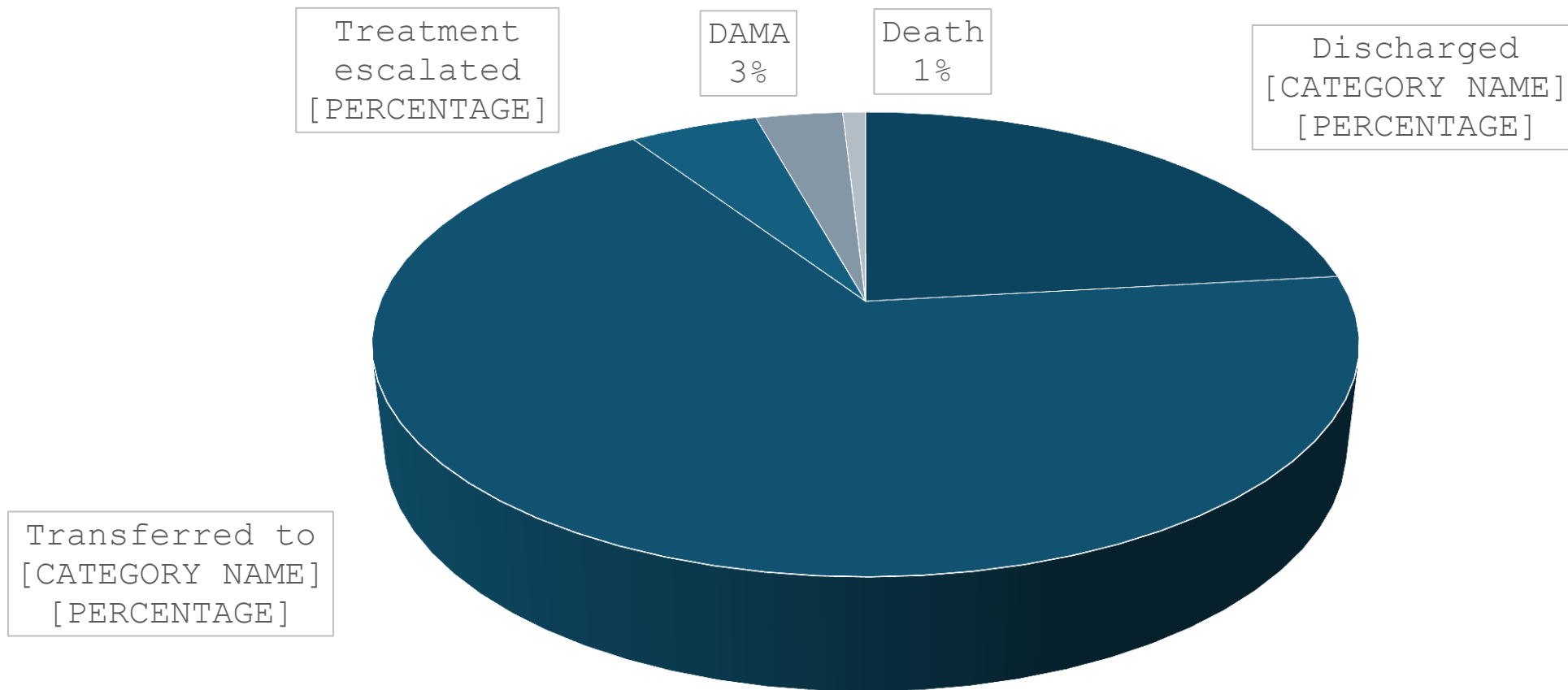
During discharge:

- Reassess patient's risk of VTE and their risk of bleeding.
- If risk of VTE outweighs risk of bleeding consider discharging patient with extended prophylaxis as per guideline.
- If discharged with VTE prophylaxis:
 - Offer patients and / or their families or carers information on -
 - Correct use and duration of VTE prophylaxis at home.
 - Importance of using VTE prophylaxis at home correctly and for recommended duration.
 - Signs and symptoms of adverse events related to VTE prophylaxis
 - Who to contact if they have problems using VTE prophylaxis at home.
- If discharged with DVT Compression stockings, ensure that the patient -
 - Understands the benefits of wearing them.
 - Is able to remove and replace the stockings or has someone who can do this.
 - Knows what to look for (e.g. skin marking, blistering or discoloration, particularly over heels and bony prominences).
 - Contact if there is a problem.
- If discharged without any VTE prophylaxis – offer patients and / or their families or carers verbal and written information on:
 - Signs and symptoms of Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE).
 - Importance of seeking medical help and who to contact if DVT, PE or other adverse event suspected.

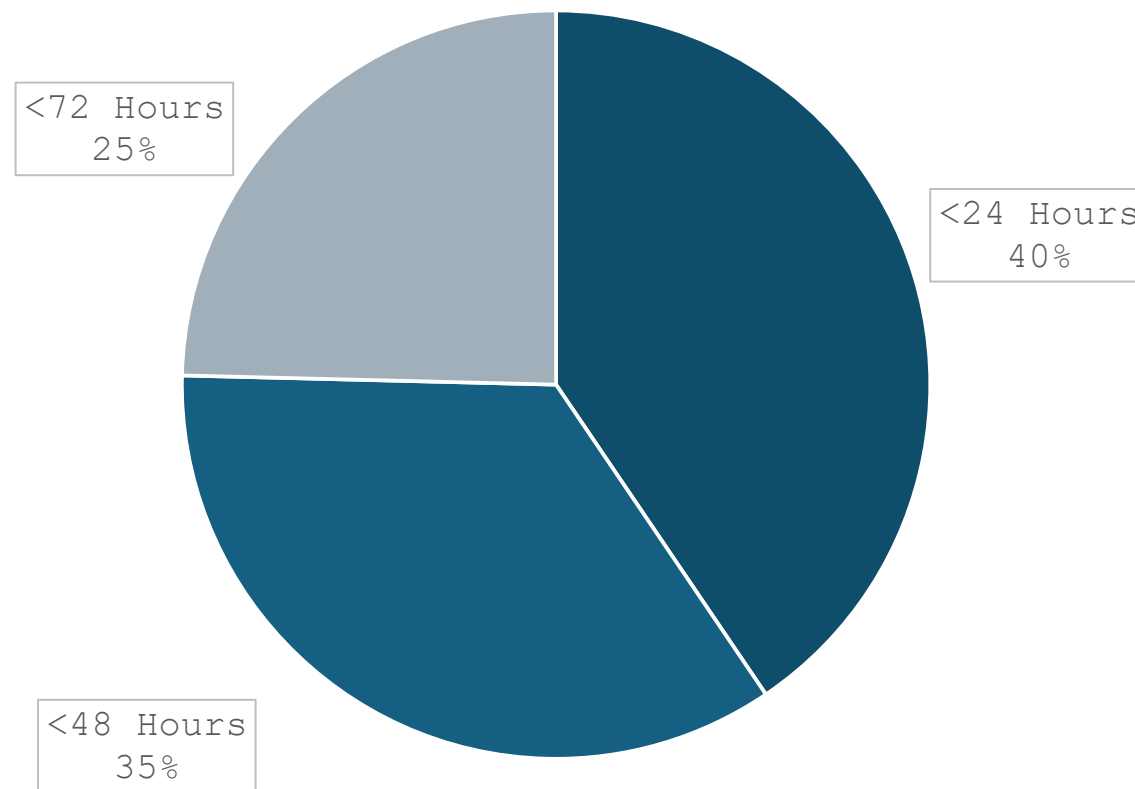
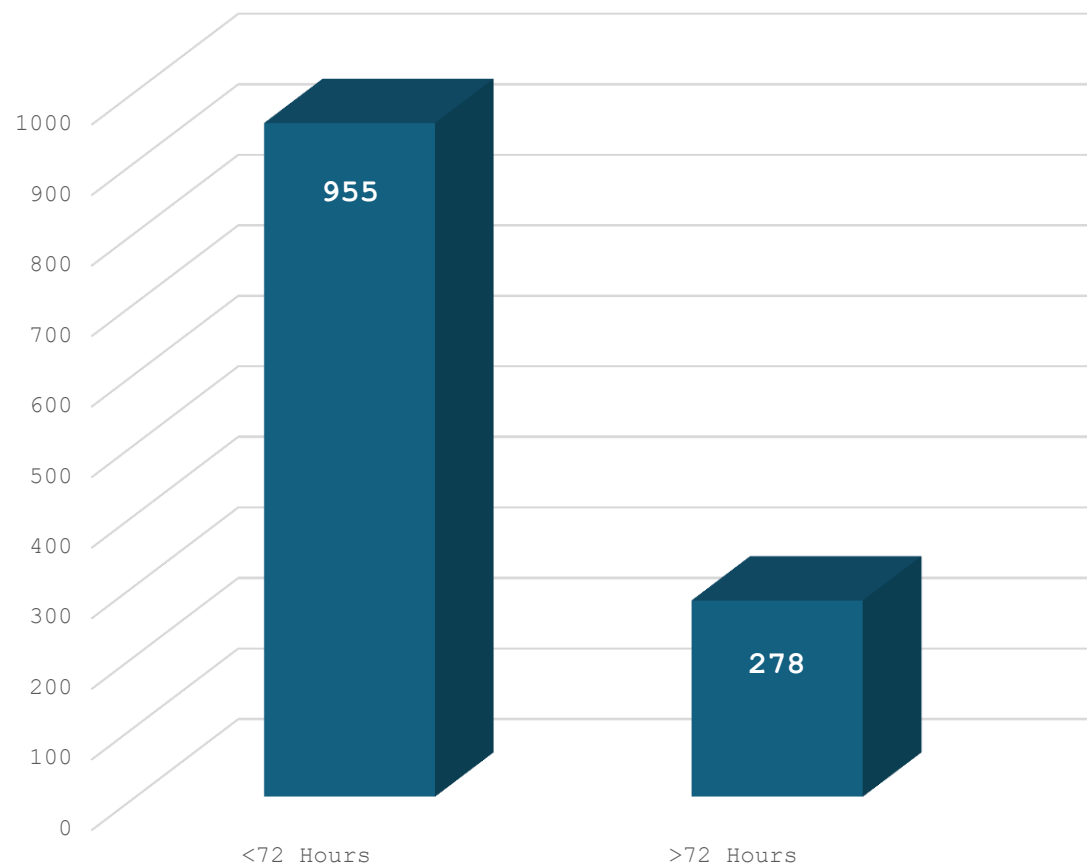
Page 3

- Strict maintenance of protocols

AMU patient outcome



AMU management time



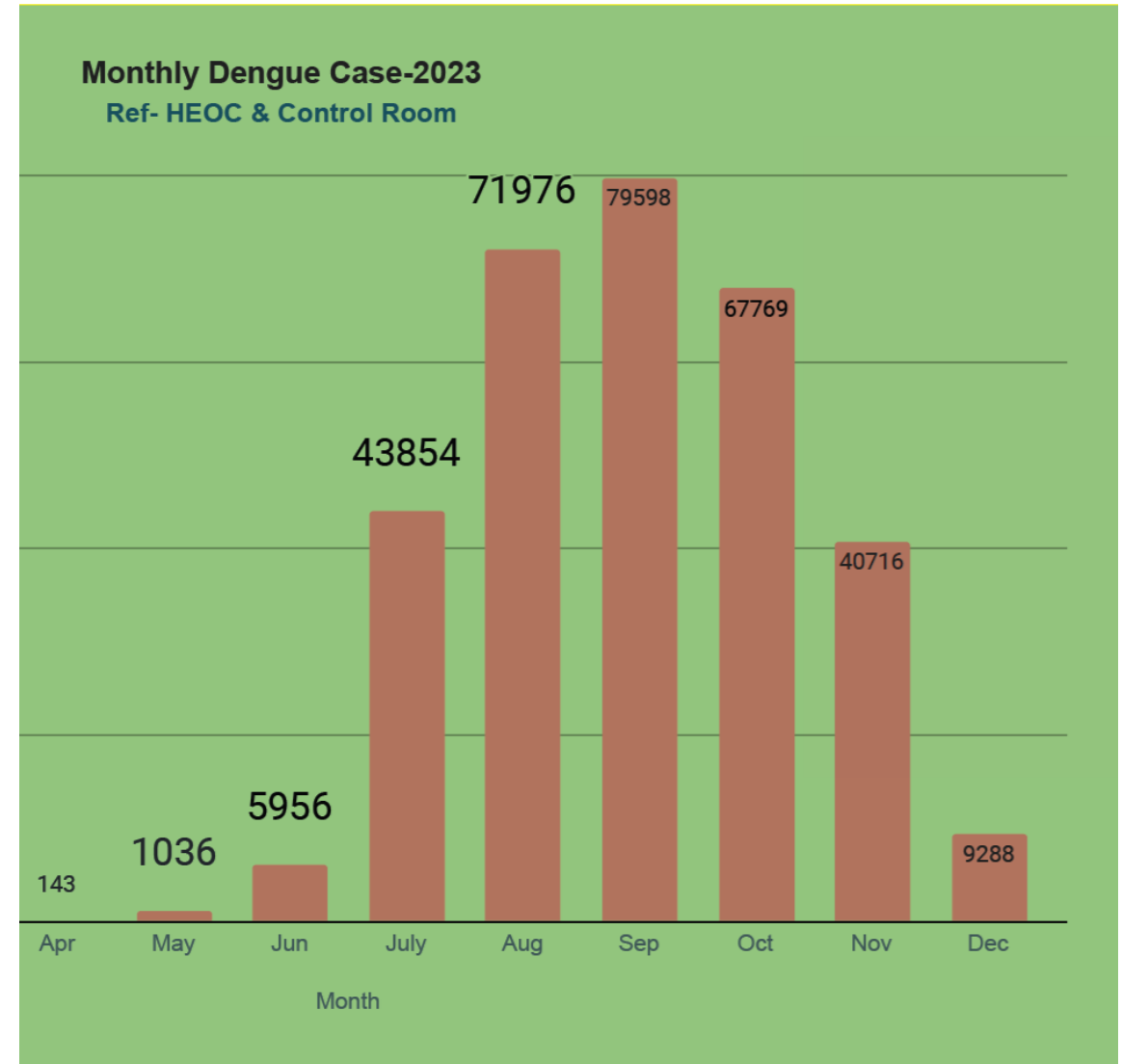


Acute Medicine:
Are the patients
benefitted?



Comparison

- Dengue cases (Jul-Nov '23)
- In Bangladesh - all physicians treat dengue
- Included
 - Dengue with warning signs
 - Severe dengue
- Excluded
 - Classical dengue fever
 - Patients treated in the ICU
 - Died



Comparison...

- Population
 - Patients treated in AM setting (n = 76)
 - Patients treated in non-AM areas (n = 243)
- Data compared:
 - **Lenth of stay & treatment cost** – as measures of quality of care¹ & patient benefit²
 - Compared with *Student's t-test*

¹Lingsma HF, Bottle A, Middleton S, et al. **Evaluation of hospital outcomes: the relation between length-of-stay, readmission, and mortality in a large international administrative database.** BMC Health Serv Res 2018;18(1):116.

²Bergmo TS. **How to Measure Costs and Benefits of eHealth Interventions: An Overview of Methods and Frameworks.** J Med Internet Res 2015;17(11):e254

Results



Significantly lower length of stay in patients treated in AM setting than in non-AM area (2.86 vs 5.05 days respectively, $p < 0.0001$)



None from AM group returned. Seven (2.8%) from the other group returned with hospital acquired infections.

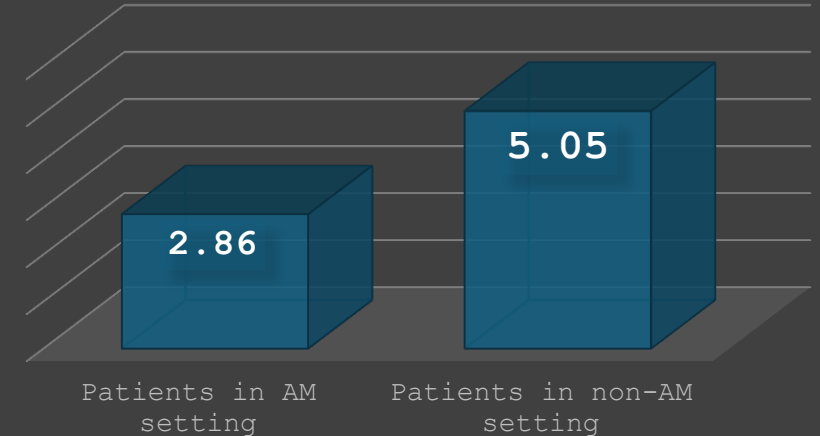


Significantly lesser treatment cost in AM setting than in non-AM area (approx. BDT 34874 or USD ~318, $p < 0.001$)

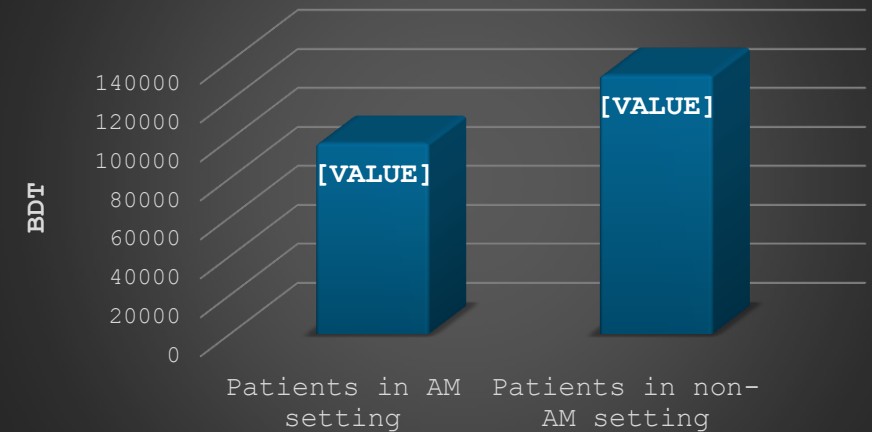


AM patients benefited economically and expressed better satisfaction.

AVERAGE ADMISSION DAYS



Average treatment cost



Why AM stood out better



STRICT ADHERENCE TO
TREATMENT GUIDELINE



USE OF BEDSIDE
MONITORING EQUIPMENT &
MODIFICATION OF
TREATMENT

Coup d'œil

- Acute medicine is proven to be beneficial for patients
- Acute medicine appears to be successful in Bangladeshi health care settings
- It is of particular importance to establish more AMUs in Bangladesh to meet the expanding number of patients with wider range of complicated conditions

