Capacity building and strengthening pediatric emergency and trauma care in Jordanian refugee camps

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Disclosures

We have no disclosures

Objectives

- To describe a capacity building partnership between Boston Children's Hospital and International Medical Corps with the aim of strengthening pediatric emergency and trauma care in Jordanian refugee camps.

Background

- International Medical Corps has been managing health care services at the two prominent Syrian refugee camps in Northern Jordan.
- **Azraq Refugee Camp;** Field Hospital plays a critical role in delivering essential healthcare to Syrian refugees.
- It offers 24/7 emergency services, pediatric inpatient care, and comprehensive maternal and newborn care.

The camps

- Zaatari Camp center (urgent care) provides emergency and outpatient care. It operates a 24/7 emergency room; 23 beds, including resuscitation unit beds.
- It serves as a stabilization point before patients are referred to hospitals in Al-Mafreq for advanced care or inpatient treatment.
- Lab services match those at Azraq, though radiology is limited to X-rays.

Partnership

International Medical Corps

Boston Children's

Margaret C. Ryan Global Health Program

MEDECINS SANS FRONTIERES

Challenges identified

- Funding cuts
- Workforce limitations
- Medication protocol/ guideline limitations
- Mental health Strain
- Lack of ongoing training

Identified priorities

- **Clinical:** The need for training with regards to recognition and management of the acutely ill or injured child;
- Neonatal/pediatric resuscitation, post-resuscitation and trauma care
- Context-specific, evidence-based practices, clinical care guidelines and protocols for common pediatric conditions

- **Mental health support;** tailored approaches to assessments, care and management of common mental health conditions in children and adolescents

- **Research Support**

Project framework and activity plan

1. **Targeted Pediatric Provider Education & Curriculum.**

Four in-person intensive trainings – Didactic sessions/ case scenarios

- Pediatric Fundamentals Course (completed September 2024)
- Recognition and management of the deteriorating child intensive course (Completed Feb 2025)
- General Pediatrics & Pediatric Emergencies Intensive (Completed Nov 2025)
- Neonatal Resuscitation Fundamentals & Infant Emergencies intensive course

2. Skills Competency Development: Hands-on workshop sessions using low-fidelity simulation tools covering primary emergency skills/ teamwork.

Project framework and activity plan

Remote mental health training for providers

- **Mental health capacity building and support:** First Aid Training for healthcare workers, educators, and community leaders including Trauma-Informed Care Workshops tailored to pediatric and general populations
- Basic Counseling skills for frontline providers and review of common Mental Health conditions, such as depression, anxiety, PTSD, and substance use disorders.
- Collaboration with the ministry of health for education and tool validation

Research support and collaboration

- **Research Capacity Building:** provide support with topics including research methodology, study design and protocol development, data collection and management as well as statistical analysis and interpretation.

- Data Agreement in place

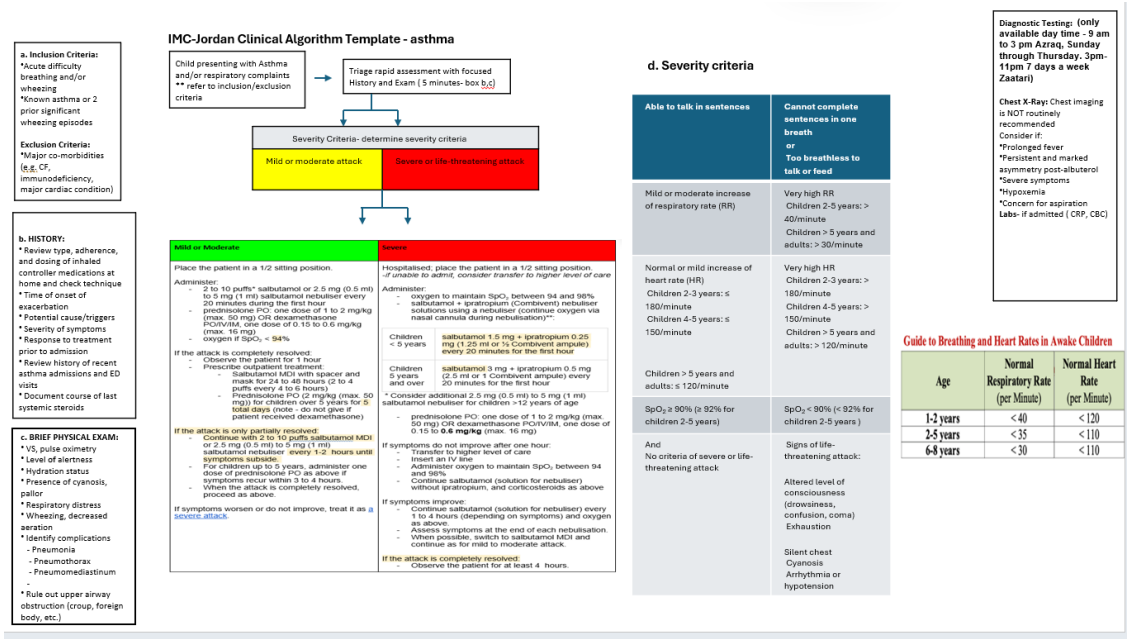
- Potential processes to be monitored could include Complete set of vitals/ pain score documentation, time to intervention/choice of antibiotics, mortality and transfers, care alignment with protocols

Clinical Guidelines and protocol development

Reference & Educational Materials

- Established working groups including at least 1 MD and RN from both camps to work with BCH clinicians on developing/ implementing guidelines and job aids

- Desired protocols were identified by the local clinicians and collaboratively developed with a BCH subject matter expert in line with existing International Medical Corps, national guidelines and WHO standards.



a. Inclusion Criteria:
*Acute difficulty breathing and/or wheezing
*Known asthma or 2 prior significant wheezing episodes

Exclusion Criteria:
*Major co-morbidities (e.g. CF, immunodeficiency, major cardiac condition)

b. HISTORY:
* Review type, adherence, and dosing of inhaled controller medications at home and check technique
* Time of onset of exacerbation
* Potential cause/triggers
* Severity of symptoms
* Response to treatment prior to admission
* Review history of recent asthma admissions and ED visits
* Document course of last systemic steroids

c. BRIEF PHYSICAL EXAM:
* VS, pulse oximetry
* Level of alertness
* Hydration status
* Presence of cyanosis, pallor
* Respiratory distress
* Wheezing, decreased aeration
* Identify complications
- Pneumonia
- Pneumothorax
- Pneumomediastinum
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* Rule out upper airway obstruction (croup, foreign body, etc.)

IMC-Jordan Clinical Algorithm Template - asthma

Child presenting with Asthma and/or respiratory complaints
** refer to inclusion/exclusion criteria

Triage rapid assessment with focused History and Exam (5 minutes- box b,c)

Severity Criteria- determine severity criteria

Mild or moderate attack | Severe or life-threatening attack

Mild or Moderate

Place the patient in a 1/2 sitting position.

Administer:
- 2 to 10 puffs* salbutamol or 2.5 mg (0.5 ml) to 5 mg (1 ml) salbutamol nebuliser every 20 minutes during the first hour
- prednisolone PO: one dose of 1 to 2 mg/kg (max. 50 mg) OR dexamethasone PO/IV/IM, one dose of 0.15 to 0.6 mg/kg (max. 16 mg)
- oxygen if SpO_2 < 94%

If the attack is completely resolved:
- Observe the patient for 1 hour
- Prescribe outpatient treatment:
  - Salbutamol MDI with spacer and mask for 24 to 48 hours (2 to 4 puffs every 4 to 6 hours)
  - Prednisolone PO (2 mg/kg (max. 50 mg)) for children over 5 years for 5 total days (note - do not give if patient received dexamethasone)

If the attack is only partially resolved:
- Continue with 2 to 10 puffs salbutamol MDI or 2.5 mg (0.5 ml) to 5 mg (1 ml) salbutamol nebuliser every 1-2 hours until symptoms subside.
- For children up to 5 years, administer one dose of prednisolone PO as above if symptoms recur within 3 to 4 hours.
- When the attack is completely resolved, proceed as above.

If symptoms worsen or do not improve, treat it as a severe attack.

Severe

Hospitalised; place the patient in a 1/2 sitting position.
If unable to admit, consider transfer to higher level of care

Administer:
- oxygen to maintain SpO_2 between 94 and 98%
- salbutamol + ipratropium (Combivent) nebuliser solutions using a nebuliser (continue oxygen via nasal cannula during nebulisation)**:

Children < 5 years	salbutamol 1.5 mg + ipratropium 0.25 mg (1.25 ml or ¼ Combivent ampule) every 20 minutes for the first hour
Children 5 years and over	salbutamol 3 mg + ipratropium 0.5 mg (2.5 ml or 1 Combivent ampule) every 20 minutes for the first hour

* Consider additional 2.5 mg (0.5 ml) to 5 mg (1 ml) salbutamol nebuliser for children >12 years of age

- prednisolone PO: one dose of 1 to 2 mg/kg (max. 50 mg) OR dexamethasone PO/IV/IM, one dose of 0.15 to **0.6 mg/kg** (max. 16 mg)

If symptoms do not improve after one hour:
- Transfer to higher level of care
- Insert an IV line
- Administer oxygen to maintain SpO_2 between 94 and 98%
- Continue salbutamol (solution for nebuliser) without ipratropium, and corticosteroids as above

If symptoms improve:
- Continue salbutamol (solution for nebuliser) every 1 to 4 hours (depending on symptoms) and oxygen as above.
- Assess symptoms at the end of each nebulisation.
- When possible, switch to salbutamol MDI and continue as for mild to moderate attack.

If the attack is completely resolved:
- Observe the patient for at least 4 hours.

d. Severity criteria

	Able to talk in sentences	Cannot complete sentences in one breath or Too breathless to talk or feed
	Mild or moderate increase of respiratory rate (RR)	Very high RR Children 2-5 years: > 40/minute Children > 5 years and adults: > 30/minute
	Normal or mild increase of heart rate (HR) Children 2-3 years: ≤ 180/minute Children 4-5 years: ≤ 150/minute Children > 5 years and adults: ≤ 120/minute	Very high HR Children 2-3 years: > 180/minute Children 4-5 years: > 150/minute Children > 5 years and adults: > 120/minute
	SpO_2 ≥ 90% (≥ 92% for children 2-5 years)	SpO_2 < 90% (< 92% for children 2-5 years)
	And No criteria of severe or life-threatening attack	Signs of life-threatening attack: Altered level of consciousness (drowsiness, confusion, coma) Exhaustion Silent chest Cyanosis Arrhythmia or hypotension

Diagnostic Testing: (only available day time - 9 am to 3 pm Azraq, Sunday through Thursday. 3pm-11pm 7 days a week Zaatari)

Chest X-Ray: Chest imaging is NOT routinely recommended
Consider if:
*Prolonged fever
*Persistent and marked asymmetry post-albuterol
*Severe symptoms
*Hypoxemia
*Concern for aspiration
Labs- if admitted (CRP, CBC)

Guide to Breathing and Heart Rates in Awake Children

Age	Normal Respiratory Rate (per Minute)	Normal Heart Rate (per Minute)
1-2 years	< 40	< 120
2-5 years	< 35	< 110
6-8 years	< 30	< 110

Ensuring sustainability - leadership/educator training

- Bedside nurses and clinicians (at least 2 physicians and 2 nurses) were identified and recognized as “pediatric champions”.
- Clinicians will receive extra training to facilitate future course offerings, including leadership, medical/nursing education techniques and evidence-based adult learning approaches.
- These clinicians will in turn facilitate identifying needs, co-lead monthly education meetings and case discussions, and help disseminate information and professional development opportunities.

Monitoring and Evaluation

- **Impact measures:** childhood outcomes, # of referral; Metrics and plan will be determined based on processes determined by the local team (ex vital signs)

- **Program implementation and evaluation indicators:**

- **System measures:** number of workers trained, program components, provider perceived competence, knowledge, behaviors

- **Program monitoring;** care providers use of intervention, number of protocols, parent materials distributed

Results- Knowledge

- Approximately 45 clinicians received training.
- Knowledge gained because of the course was evaluated by comparing pre- and post- tests.
- The mean score difference between the pre- and post-tests was 16.7 points, with 91.3% of participants showing an increased score at the post test.

Results- Confidence

- Confidence improvements as a result of the course were assessed by comparing pre- and post- surveys and objective skills check lists.
- 94% of respondents felt like they have the ability to recognize a critically ill child.
- 100% felt more prepared and had an organized approach to care for critical ill children.
- 94% felt more confident in participating as a member of an interdisciplinary team

Results- course evaluations

- Anonymous course evaluations were solicited at the conclusion of the course
- 100% of respondents reported that the learning objectives were met and that the teaching was relevant to their practice.

Conclusion

- The initiatives presented are designed to improve pediatric care quality, standardization and adherence to evidence based pediatric practice and elevate pediatric emergency capacity.
- The BCH team is excited to continue this collaboration to support the learning needs of clinical staff in Azraq and Zaatari Hospital.