

## **SARI CRITICAL CARE TRAINING**

# **TRIAGE AND EARLY RECOGNITION OF PATIENTS WITH SARI**

# Learning objectives

**At the end of this lecture, you will be able to:**

- Describe general principles of managing the critically ill patient with severe acute respiratory infection (SARI).
- Describe IPC interventions at triage
- Describe triage tools.
- Recognize patients with uncomplicated influenza-like illness (ARI) that can go home.
- Recognize patients with SARI that need emergent care and hospitalization (including ICU admission).
- Coordinate safe patient transfer.

# Principles of caring for the critically ill SARI patient

- Apply appropriate IPC precautions immediately.
- Recognize the critically ill patient early.
- Treat the underlying aetiology as soon as possible.
- Treat with evidence-based, supportive therapies as soon as possible.
- Monitor-record-interpret-respond.
- Deliver quality care.

If a patient is suspected to have a novel or emerging viral infection, notify health officials as soon as possible.



# Screen: epidemiologic history

- Suspect COVID-2019 in a patient with SARI that
  - Resides or has traveled to countries with ongoing human or animal infections.
  - Exposure to live or dead animals (i.e. birds, swine, camels).
  - Close exposure to patient with SARI of unclear etiology.

See WHO website for current case definitions for nCoV infection <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>



# Apply appropriate IPC at triage (any ARI)

- Apply droplet precautions
- Give the suspect patient with ARI a medical mask
- Instruct the patient to practice respiratory hygiene and hand hygiene and to avoid movements within the facility
- Locate the suspect patient in separate area
- Keep at least 2 m distance between patients



Aim to avoid transmission to other patients and to health care workers. But do not delay medical treatments

# If suspect COVID-2019, avian influenza, MERS-CoV or SARS-CoV

- **Add contact to droplet precaution measures.**
  - HCW wears gown, gloves, medical mask and eye protection when examining patient.
  - Use dedicated patient equipment when possible, (such as stethoscopes) or wash and disinfect between patients.
- **Add airborne precautions** if there is an emergent need for intubation or cardiopulmonary resuscitation

# Triage (1/2): set up referral pathways

- Conduct triage at the sick patient's **first point of contact with health care system.**
- **Pre-hospital stage:**
  - ambulance
  - clinic.
- **Hospital stage:**
  - admissions ward
  - emergency area or department, accident and emergency department, casualty area
  - general ward.

# Triage (2/2)

- **Prioritize and sort** patients based on their severity of illness and need for immediate care.
  - Use standardized triage tools to ensure reliability and valid sorting of patients
  - Avoid “under-triage” and “over-triage”.
  - Identify high priority patients that need immediate care.



**Check for RED criteria**

Airway & Breathing	Other
Unresponsive	High-risk trauma
Stridor	Poisoning/ingestion or dangerous chemical exposure
Respiratory distress or central cyanosis	Threatened limb
<b>Circulation</b>	Snake bite
Weak pulse or capillary refill >3 sec	Acute chest or abdominal pain (>50 years old)
HR < 50 or > 150	ECG with acute ischaemia
Heavy bleeding	Violent or aggressive
<b>Disability</b>	<b>Pregnant with any of:</b>
Active convulsions	Heavy bleeding
Any two of: Altered mental status Stiff neck Hypothermia or fever Headache	Severe abdominal pain
Hypoglycaemia	Seizures
	Severe headache
	Visual changes
	SBP ≥ 160 or DBP ≥ 110
	Active labour
	Trauma

Yes

**Move to High Acuity Area immediately**

**Check for YELLOW criteria**

Vomits everything or ongoing diarrhoea	Severe pain (no red criteria)
Unable to feed or drink	Visible acute limb deformity
Sever pallor	Open fracture
On-going bleeding (no red criteria)	Suspected dislocation
Recent fainting	Other trauma/burns (no red criteria)
Altered mental status or agitation (no red criteria)	Sexual assault
Acute general weakness	Acute testicular/scrotal pain or priapism
Acute focal neurology	Unable to pass urine
Acute visual disturbance	Wheezing (no red criteria)
New rash worsening over hours or peeling (no red criteria)	Exposure requiring time-sensitive prophylaxis (eg. animal bite, needlestick)

Yes

**Move to Clinical Area**

Yes

**Check for high risk vital signs**

HR < 60 or > 130
RR < 12 or > 30
Temp < 36° or > 39°
SpO <sub>2</sub> < 92%
AVPU other than A

No

**Move to Low Acuity or Waiting**

**WHO – ICRC  
Integrated Triage  
Tool  
≥ 12 years**

**Check for RED criteria**

Airway & Breathing	Other
Unresponsive	Any infant <8 days old
Stridor	Age <2 months and temp <36 or >39°C
Respiratory distress or central cyanosis	High-risk trauma
SpO <sub>2</sub> <90%	Threatened limb
Circulation	Acute testicular/scrotal pain or priapism
Capillary refill >3 sec	Snake bite
Weak and fast pulse	Poisoning/ingestion or dangerous chemical exposure
Heavy bleeding	
Disability	
Active convulsions	Any 2 of: • Lethargy • Sunken eyes • Very slow skin pinch • Drinks poorly
Hypoglycaemia	

No

**Check for YELLOW criteria**

Any infant 8 days to 2 months old	Severe pallor
Unable to feed or drink	Restless, continuously irritable or lethargy
Vomits everything	Severe pain
On-going diarrhoea	Trauma/burn (no red criteria)
Dehydration	Known diagnosis requiring urgent surgical intervention
Wheezing (no red criteria)	New rash worsening over hours or peeling (no red criteria)
Malnutrition: Visible severe wasting OR oedema of both feet	Exposure requiring time-sensitive prophylaxis (eg. animal bite)

No

Yes

**Check for high risk vital signs**

Temp <36° or >39°			
SpO <sub>2</sub> <92%			
AVPU other than A			
RR	under 1 year	>1 and <5 years	>5 and <12 years
High	50	40	30
Low	20	15	10
RR	under 1 year	>1 and <5 years	>5 and <12 years
High	50	40	30
Low	20	15	10

No

**WHO – ICRC Integrated Triage Tool < 12 years**

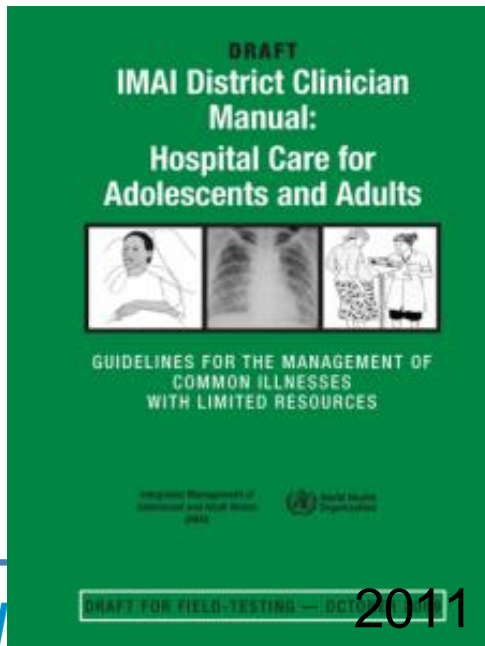
**Move to High Acuity Area immediately**

**Move to Clinical Area**

**Move to Low Acuity or Waiting**

# WHO hospital care handbooks

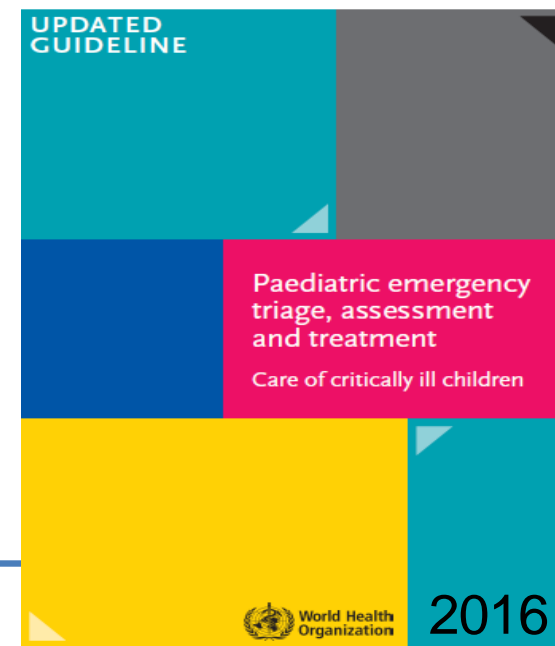
- Emergency treatments for clinical use
  - IMAI quick check
  - Pocket book
  - IMCI emergency triage, assessment and treatment.



2011



2013



2016



World Health Organization



World Health Organization

EMERGENCIES programme

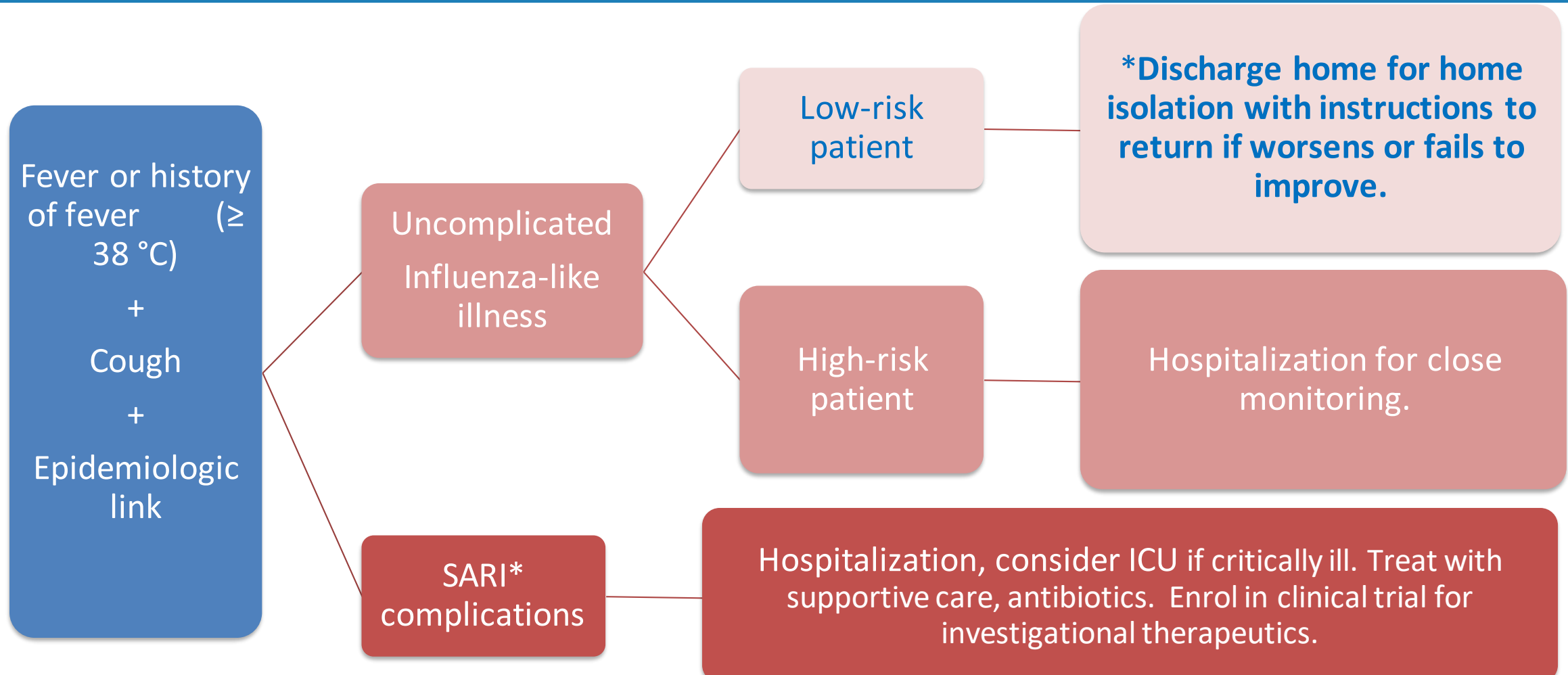
# Risk factors for severe disease (influenza)

- **Comorbidities**
  - **cardiovascular disease** (cardiac failure) (COVID-2019)
  - **pulmonary disease** (asthma and COPD)
  - **metabolic disease** (diabetes)
  - **kidney disease**
  - **hepatic disease**
  - **haemoglobinopathies**
  - **chronic neurologic conditions** (neuromuscular, neurocognitive and seizure disorders).
- **Extremes of age**
  - **infants and young children** (< 2 years)
  - **elderly** ( $\geq 65$ ). COVID-2019
- **Immunosuppressive conditions**
  - HIV, immunosuppressive medication, malignancy.
- **Special situations**
  - **children receiving chronic aspirin therapy**
  - **pregnancy (up to 2 weeks' postpartum).**

High risks groups should be considered for hospitalization even with mild disease, for close monitoring to detect deterioration and treatment



# Assess patients with ARI (suspect COVID-2019)



\* Home care can be considered in settings when health system is unable to isolate patients in health care settings. Use WHO home care guidance: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>

# Uncomplicated illness:

- Symptoms are non-specific:
  - fever and cough within 10 days
  - sore throat, nasal congestion or rhinorrhea
  - headache, muscle pain or malaise
  - diarrhea or vomiting.
  - Elderly or immunosuppressed patients may present with atypical symptoms and may not have fever.
- Patient with uncomplicated disease are **without** signs of:
  - dehydration
  - shortness of breath
  - Sepsis.



# Clinical symptoms suggestive of SARI

- Decreased activity, dizziness, decreased urine output.
- Increasing breathing difficulties, cyanosis, bloody or coloured sputum, chest pain, noisy breathing.
- Confusion, lethargy, coma, weakness, seizures.
- Persistent high fever and other symptoms beyond 3 days without signs of resolution.
- Children may also present with poor feeding, excessive diarrhea and vomiting.



Educate community members that if they develop any of these symptoms to seek medical care.

# Clinical signs suggestive of SARI

- **Respiratory distress:**
  - fast breathing, shortness of breath, accessory muscle use, cyanosis, grunting, severe chest indrawing, wheezing, stridor.
- **Cardiovascular/circulatory instability**
  - delayed capillary refill, weak pulse, cool extremities, reduced urine output, low blood pressure.
- **Neurological instability**
  - alteration of mental status, seizures, irritability, confusion, lethargy.
- **Severe dehydration, stridor**
  - sunken eyes, very low skin pinch, unable to drink, lethargy.

First responders should recognize these signs and symptoms, start available emergency care and refer the sick patient for hospitalization.





# Clinical syndromes that require hospitalization

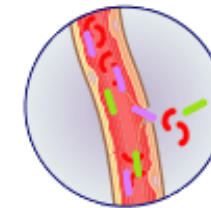
- Severe pneumonia (later lecture)
- Sepsis (later lecture)
- Croup and tracheitis
- Severe dehydration
- Secondary bacterial co-infections
- Exacerbations of chronic diseases (i.e. COPD, CHF, DM)



Severe pneumonia



Sepsis

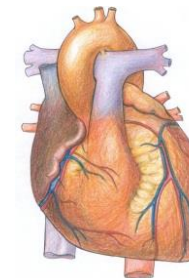


Leaky vessel

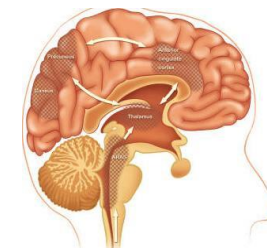
Acute kidney injury



Myocarditis



Encephalitis



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Sally Fong <http://www.aic.cuhk.edu.hk/web8/Hi%20res/Kidney%20cross%20section.jpg> ,

© Kathy Mak <http://www.aic.cuhk.edu.hk/web8/Heart%20diagrams.htm>

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# Caring for SARI patient at pre-hospital setting

- Apply IPC interventions at all times.
- Provide available emergency care; call for help (**COVID-hotline**)
- Refer to local emergency medical service (EMS) protocols (**COVID-protocol, central dispatch**).
- Arrange for safe transfer to hospital with isolation and ICU capacity (**COVID-designated centres**)

# Caring for SARI patient in the emergency area of hospital

- Apply IPC interventions at all times.
- Provide available emergency care, call for help.
- Refer to local ward and ICU admission criteria.
- Arrange for safe admission to ward or ICU.

# Emergency care

- Based on clinical condition and available resources:
  - administer oxygen +/- advanced ventilatory support
  - insert peripheral IV and start fluid therapy (if in septic shock)
  - give appropriate antimicrobial therapies before transfer
  - obtain appropriate laboratory testing (i.e. respiratory tract swabs, blood cultures, chest radiograph, CBC).

Do NOT delay life-saving treatments.  
Early treatment reduces mortality.



# ICU admission



- ICUs care for critically ill patients
  - impending or ongoing acute, life-threatening organ dysfunction
  - need intensive and continuous monitoring
  - need intensive therapies that cannot be delivered on the general ward (i.e. oxygen therapy, ventilation)
  - depending on local resources, many SARI patients will require ICU admission.

**Do NOT delay ICU admission.  
Delay is associated with higher mortality.**

# Safe patient transfer

- Ensure IPC measures are always applied.
- Ensure appropriate diagnostics and emergency treatments have been given and patient is stable and ready for transport.
- Ensure all monitors and ongoing treatments are secured and can be maintained during transport.
- Ensure appropriate documentation and handover of care to next responsible clinicians.
- Ensure the responsible health care worker is prepared.

# Summary

- At triage, identify patients with ARI and apply appropriate IPC precautions to prevent spread of illness to health care workers or other patients.
- Triage all patients at first point of contact with health care setting with standardized triage tools.
- Recognize patients with SARI that need emergent care, start emergency interventions and arrange for hospitalization using national referral pathways.
- Clinical syndromes that require hospitalization include-severe pneumonia, sepsis, severe dehydration or exacerbation of chronic disease.
- Patients with SARI that are critically ill should be transferred safely and in a timely fashion to an ICU for intensive monitoring and care that cannot be delivered on the general ward.

# Acknowledgements

## Contributors

Dr Janet V Diaz, WHO consultant, San Francisco, USA

Dr T Eoin West, University of Washington, Seattle, USA

Dr Hillary Cohen, Maimonides Medical Center, New York, USA

Dr Neill Adhikari, Sunnybrook University, Toronto, Canada

Dr Paula Lister, Great Ormond Street Hospital, London, UK

Dr Abdo Khoury, Franche-Compte Medical and Trauma Hospital, Besançon, France

Dr Paul McGinn, Australia