Developing Flashcards & Treatment Algorithms for Snakebite

A Practical Guide for the WHO South-East Asia Region

Why develop locally relevant tools?

- Local context matters in snakebite management
- Snake species, envenoming patterns, and antivenom availability vary by region
- Health systems differ in capacity, referral pathways, and staff training
- Regional language/s and cultural context important for comprehension and clarity

Locally-tailored materials improve uptake, usability, and clinical decision-making

01 | Define purpose & audience

02 | Understand local context

03 | Consult stakeholders

04 | Build evidence-based content

05 | Format for readability

Pilot & Revise | 06

Implement & Update | 07

Define purpose and audience

1

- Flashcards: What to do immediately? What to avoid?
- Algorithms: When to monitor or start initial treatment? When to refer?

- Tailor content to level of training
- Nurses and first-contact clinicians

Understand local context

2

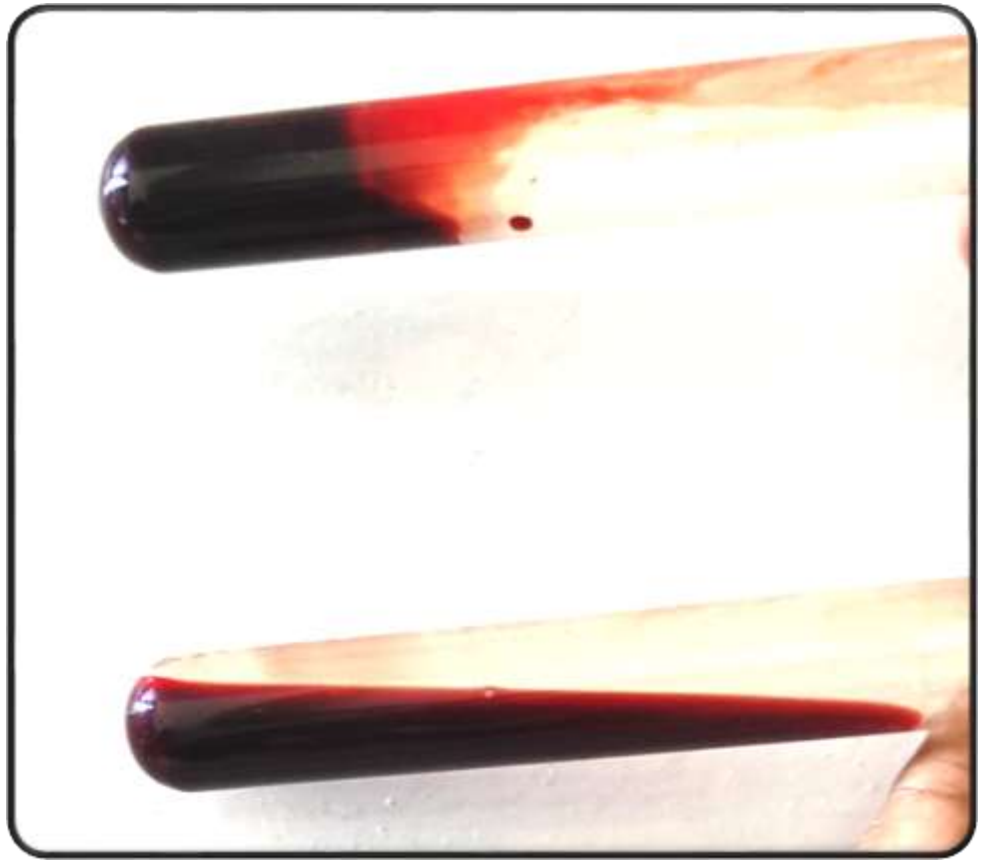
Map resources:

- What level is the facility?
- Who staffs them?
- Is antivenom stocked?

A Primary Health Center in South India

Tailor to local clinical realities:

- Medically-important snake species and envenoming patterns
- Transport availability
- Referral capacity
- Equipment



The 20-minute whole blood clotting test
PC : Dr. Amith Balachandran

PROTOCOL FOR INITIAL MANAGEMENT OF SNAKEBITE AT HEALTH FACILITIES (PHC/CHC)

SUSPECTED SNAKEBITE

CHECK VITALS OF PATIENT

Assess & Treat as per ABCDE approach
ABCDE (Airway, Breathing, Circulation, Disability, Exposure)

STABLE PATIENT

UNSTABLE PATIENT

Check for Signs and Symptoms of Snakebite Envenomation

Local Symptoms (PONDS)
- **P**ain
- **O**zing
- **N**ode enlargement
- **D**iscoloration
- **S**welling and Blisters

Krait bite does not produce local symptoms, but can cause abdominal pain/vomiting.

Neurological Symptoms
- Drooping of eyelids
- Difficulty in swallowing and speaking
- Neck muscle weakness/difficulty in lifting head
- Difficulty in breathing
- Weakness in all 4 limbs

Hematological Symptoms
- Bleeding from ears, nose, throat, gums (or any other site distant from the bite site)
- 20 Minute Whole Blood Clotting Test (20 WBCT) Positive
- Hypotension and Shock

If victim does not show signs or symptoms of envenomation, keep under observation for 24 hours and then discharge

If victim shows signs or symptoms of envenomation

ADVERSE REACTION
If adverse reaction occurs due to ASV, immediately STOP ASV temporarily

Treatment for Adverse Reaction
- Adrenaline Injection IM for Adult 0.5 mg, (in Deltoid Region), for Child- 0.01 mg/kg body weight to be given in antero-lateral aspect of thigh (middle 1/3rd). Repeat dose after 5 minutes if patient has not improved.
- Hydrocortisone Injection IV, for Adult 100 mg, for Child- 2 mg/kg body weight
- Ranitidine Injection IV, for Adult 50 mg, for Child- 0.8 mg/kg body weight
- Chlorpheniramine Injection IV, for Adult 10 mg, for Child- 0.2 mg/kg body weight
- Nebulise with Salbutamol
- Administer High- flow Oxygen,
- Fluid bolus for shock, Adult- 500-1000 ml, for Child- 20 ml/kg body weight

Monitor for recovery from Adverse Reaction

When the Patient has recovered
- Restart ASV slowly for 10-15 mins,
- Resume Normal Saline with ASV at normal drip rate

If No Signs of Recovery/Adverse Reaction persists → Refer to Higher Center

- START Anti Snake Venom (ASV)

ASV Dosage (for Neuroparalytic / Vasculotoxic Snakebite)
- ASV 10 vials IV in Normal Saline (5-10 ml/kg body weight) over 30 minutes
- ASV to be repeated for patients who are not improving or worsening
  In Neuroparalytic envenoming where the biting snake is not known or in proven cases of Cobra envenoming give Neostigmine and Atropine in addition to ASV
- Give Antibiotics as needed
- Give Injection Tetanus Toxoid (TT) IM in Deltoid Region (not in Gluteal Region) to all snakebite patients except those with coagulopathy, in which case, the injection is postponed until hemostasis is achieved (bleeding has stopped)
- Monitor for development of Adverse Reaction to ASV for 2 hours from starting ASV

NO ADVERSE REACTION

Complete full dose of ASV

Indications for Referral to Higher Center
- Requirement of repeat dose of ASV
- Development of Compartment Syndrome
- Signs of Stroke
- Signs of Acute Coronary Syndrome
- Acute Kidney Injury, need for Dialysis
- Persistent bleeding, need for Blood Transfusion
- Cellulitis / Gangrene / Progressive Septicemia
- Respiratory Failure and prolonged need for Mechanical Ventilation

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For details, refer to Standard Treatment Guidelines for Management of Snakebite

20 Minute Whole Blood Clotting Test (20 WBCT)

1. Take 1-2 milliliters of venous blood in a clean, dry glass bottle or vial
2. Allow to stand at room temperature for 20 minutes
3. Leave undisturbed
4. Tip and record the presence or absence of a complete clot
5. If no clot forms and the blood remains liquid, the test result is positive

In case where the 20WBCT result is inconsistent with the patient's clinical condition, repeat the test in duplicate, including a "control" (blood from a healthy person).

20 WBCT may remain negative in patients with evolving "Venom-induced consumption coagulopathy" (VICC), therefore, the patient should be re-tested hourly for the first 3 hours and then 6 hourly for 24 hours until either test result is not clotted or clinical evidence of envenomation to ascertain if dose of ASV is indicated

Snake Bite Prevention and Control, NCDC, DGHS, MoHFW, GoI

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Adapt to language and culture:

- Translate materials into regionally spoken languages if needed
- If starting with English content : back-translate and reconcile regional versions to ensure cross-cultural equivalence in translation
- Ensure cultural relevance : Familiar terminology and respectful visuals, symbols, colors, examples that resonate with local practice or beliefs
- Reflect cultural context in imagery if used

Visuals in cultural context

Instructions translated into Hindi

Consult Stakeholders

3

Consult and involve:

- Physicians experienced with snakebite management
- Program managers
- Experts from related sectors: ecology, herpetology
- Relevant ministries and departments: health, environment, wildlife, education
- Training institutes and medical educators

Consultation with clinical experts at NCDC, New Delhi

Picture : Shewale AD, Mishra D, Tiwari S, et al. Trop Med Infect Dis 2025;10:132

Remember to keep end-users at the center: frontline workers

Early end-user involvement builds:

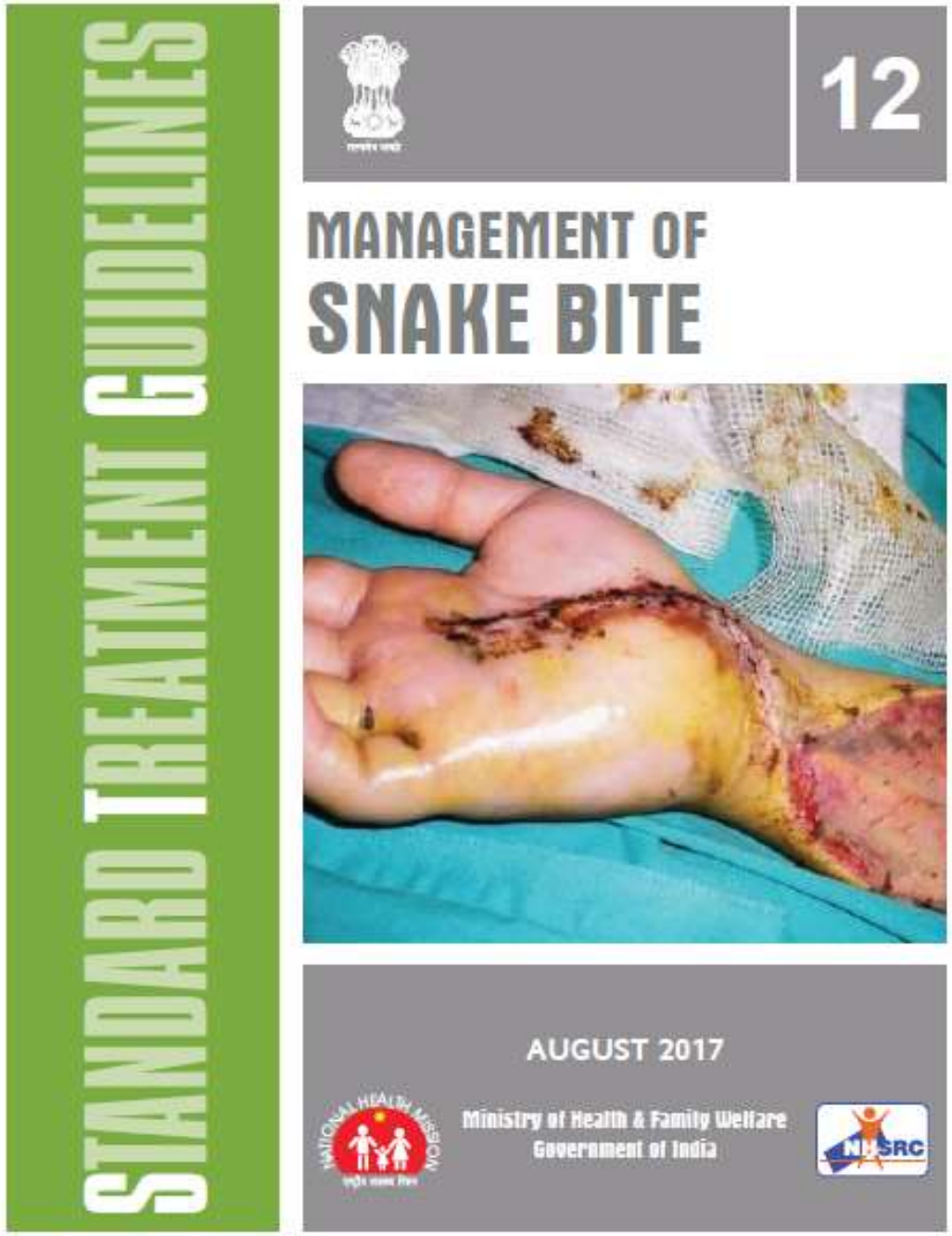
- Ownership
- Relevance
- Better uptake

Build evidence-based content

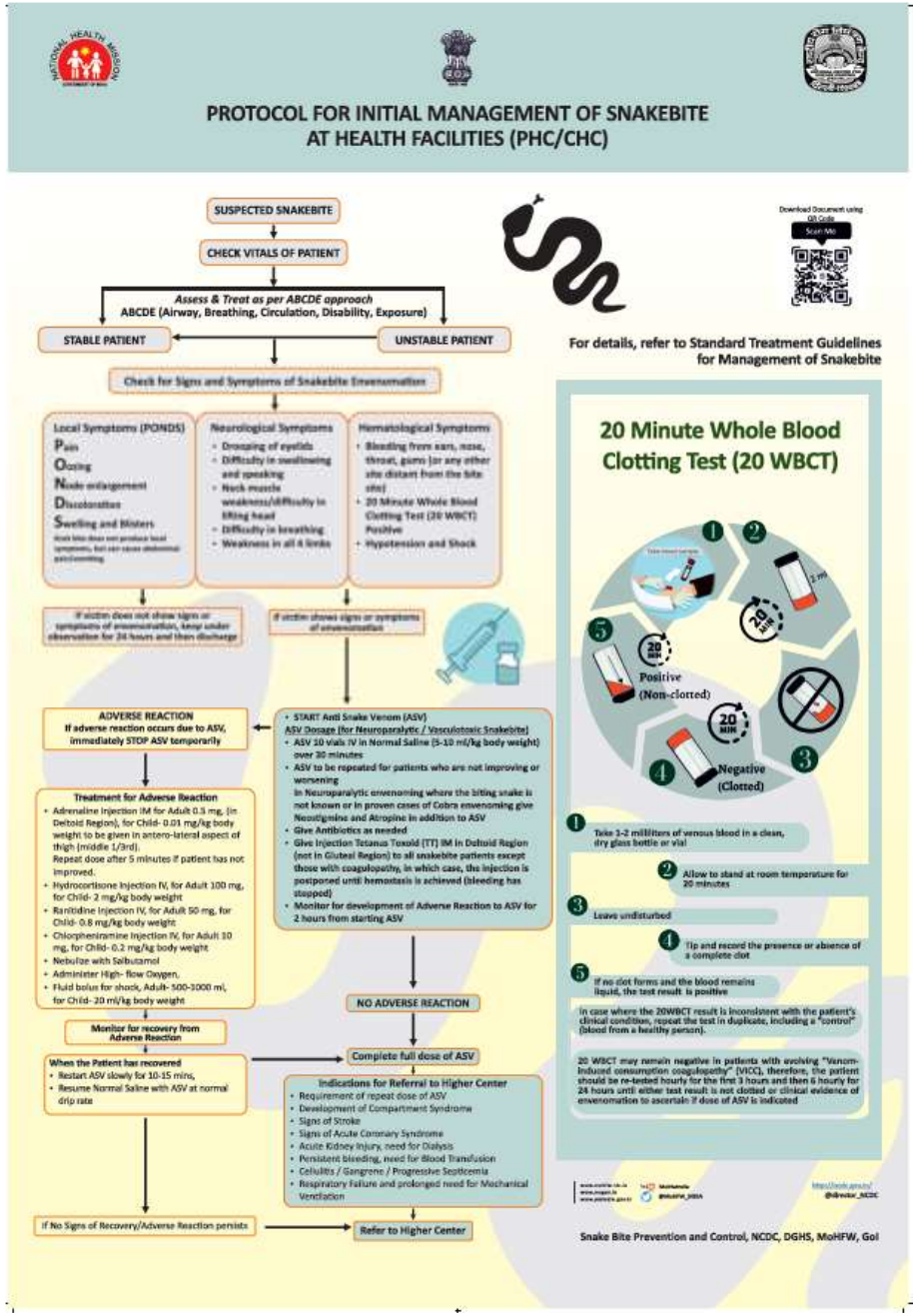
4

Base content on standard guidelines (National/WHO)

ADAPTE Framework : systematic approach for adapting clinical practice guidelines to different settings and health systems

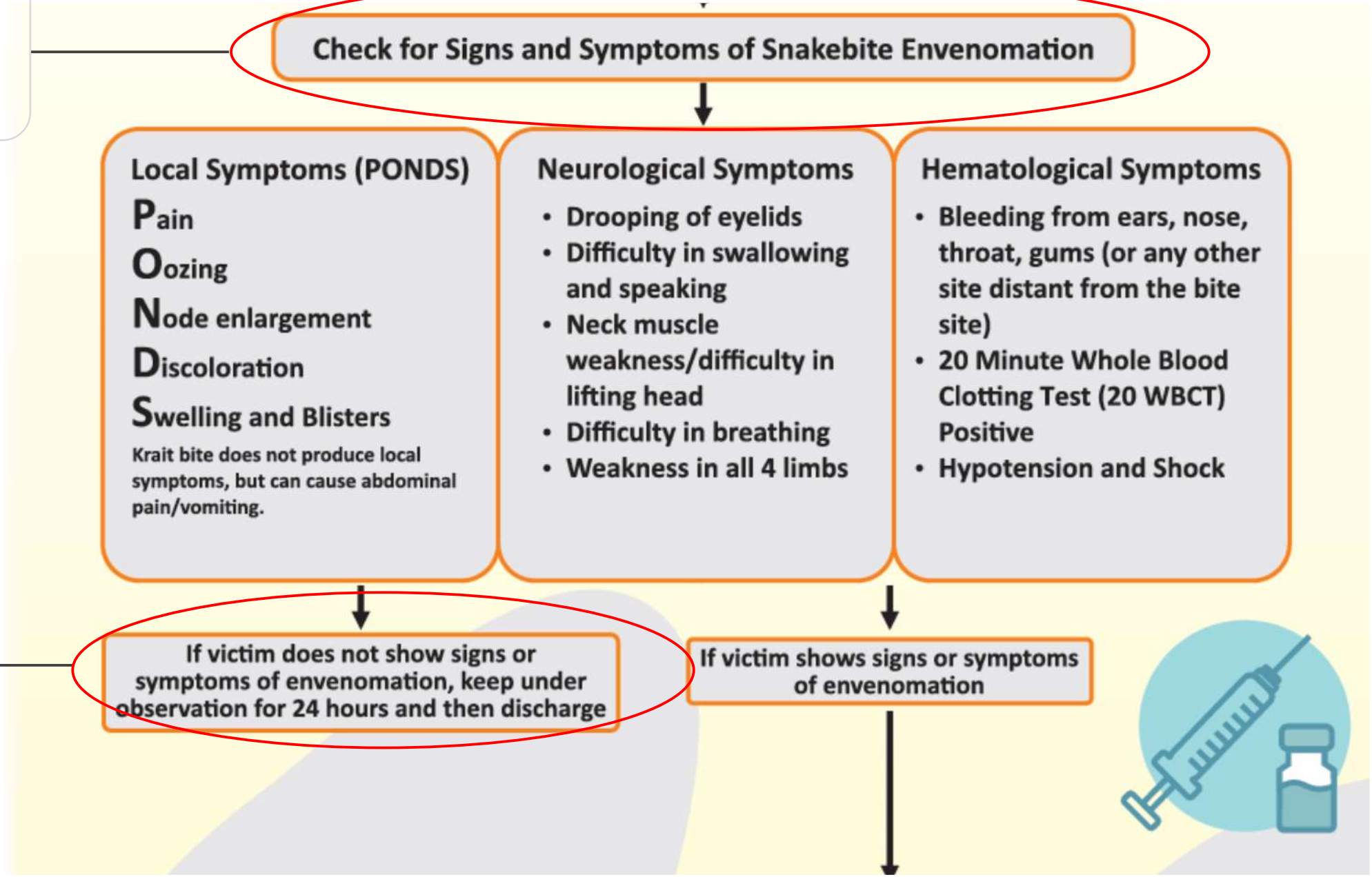


- Simple language
- Avoid medical jargon
- Short, action-oriented phrases
- Bullet points, yes/no flow steps, or IF/THEN logic



Action-oriented phrase

Box with IF/THEN logic



Format for readability

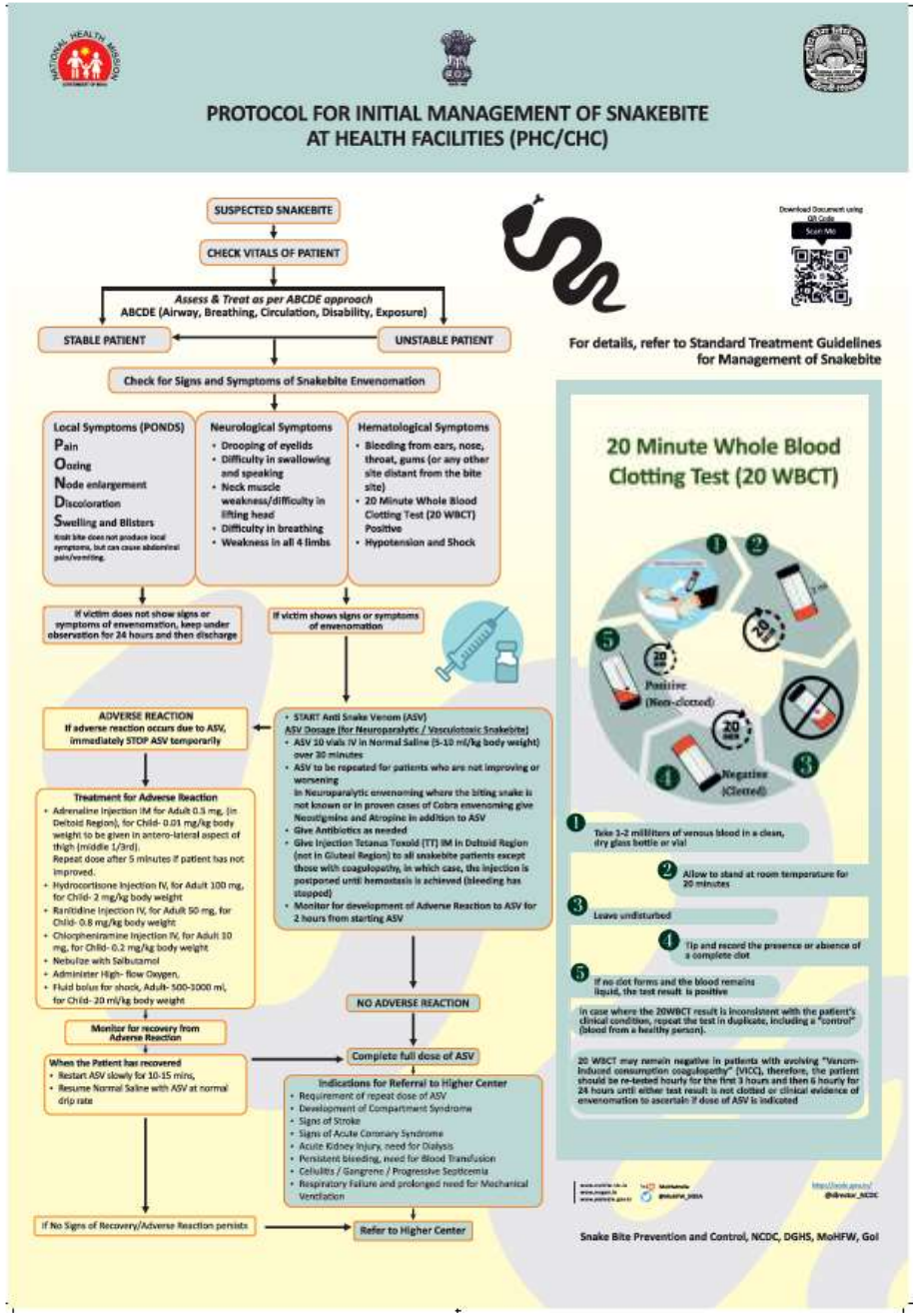
5

Flashcards:

- Prioritize 3-5 clear “Do” and “Don’t” points per card
- Use large, readable text and simple icons

Algorithms:

- Keep flowcharts simple
- Use arrows and boxes to guide decisions
- Use visual cues as memory aids



Visual cues to reinforce key steps of 20WBCT

Pilot & Revise

6

Pilot tool with few users at target facilities

Get feedback on:

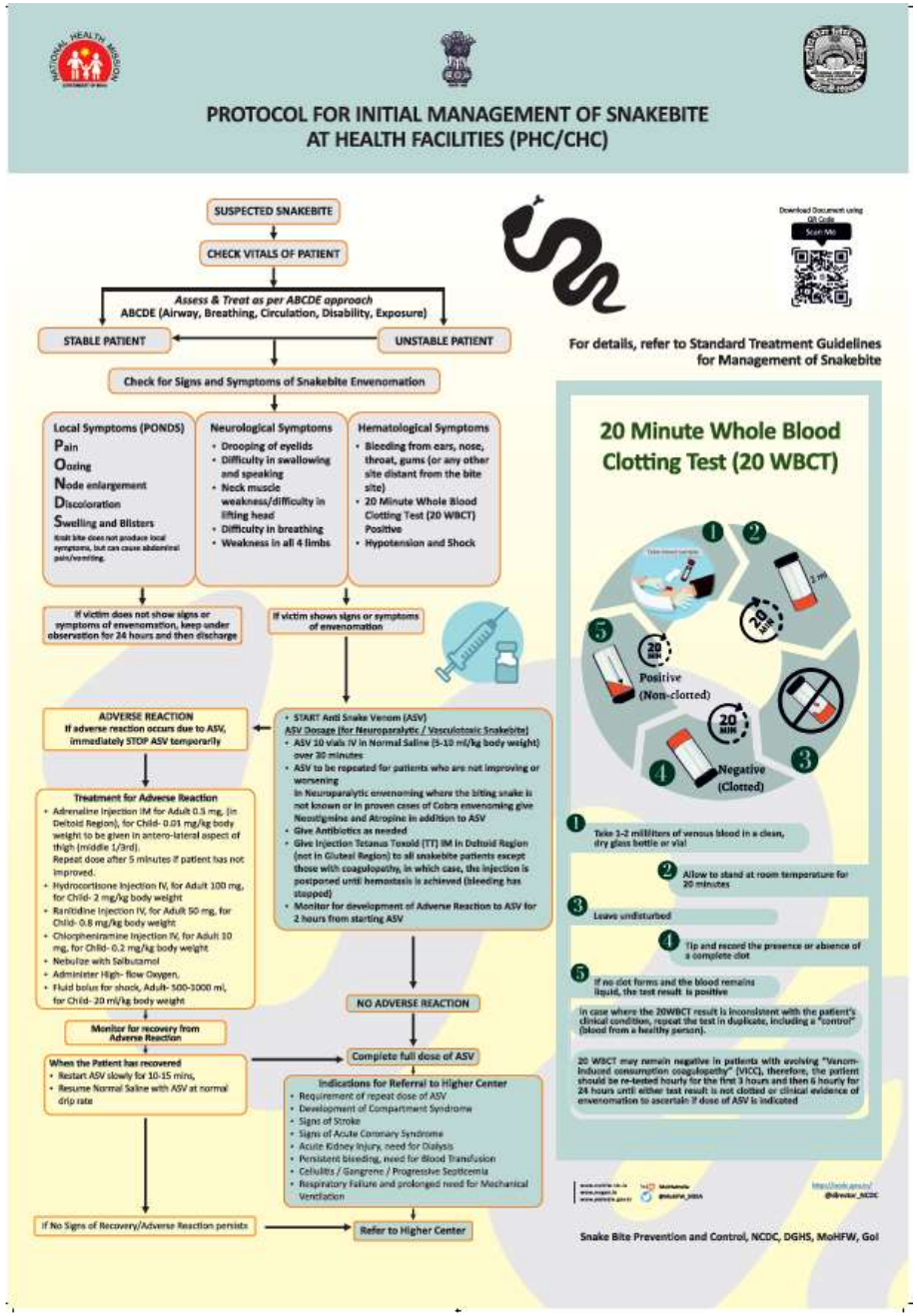
- Clarity
- Practicality
- Usefulness in real world settings

Revise based on what works

Implement & Update

7

- Distribute widely: Posters, laminated cards, digital formats
- Embed in training: Use in workshops and CMEs
- Printable or scannable



QR Code to download treatment algorithm

- Plan for updates: Revise every 3-5 years or with protocol changes
- Provide contact details for feedback/clarifications

SNAKEBITE PREVENTION AND CONTROL

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THANK YOU