STANDARD TREATMENT WORKFLOW (STW)

Acute Kidney Injury

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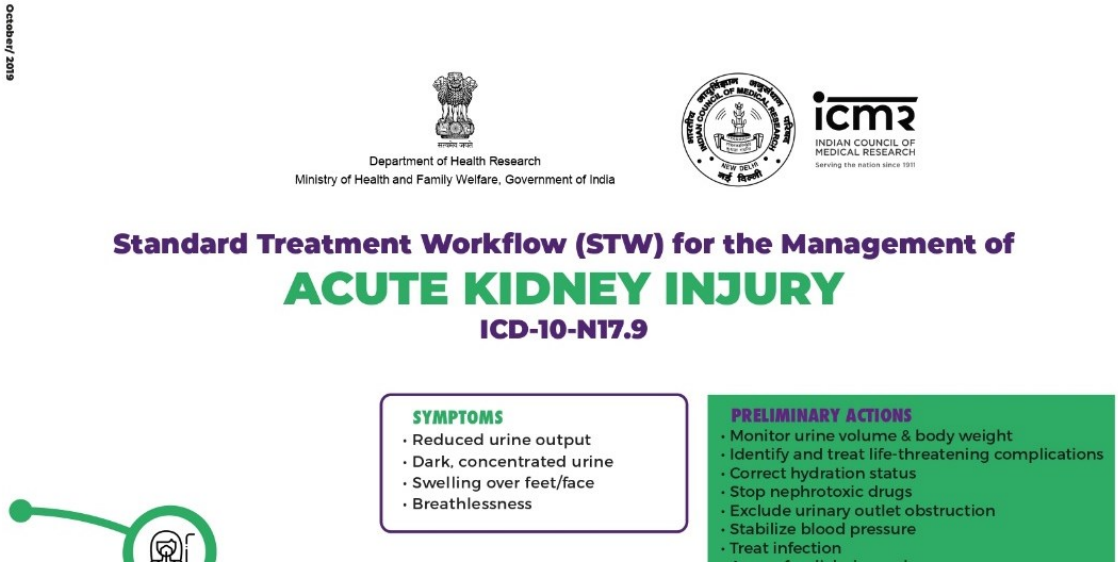

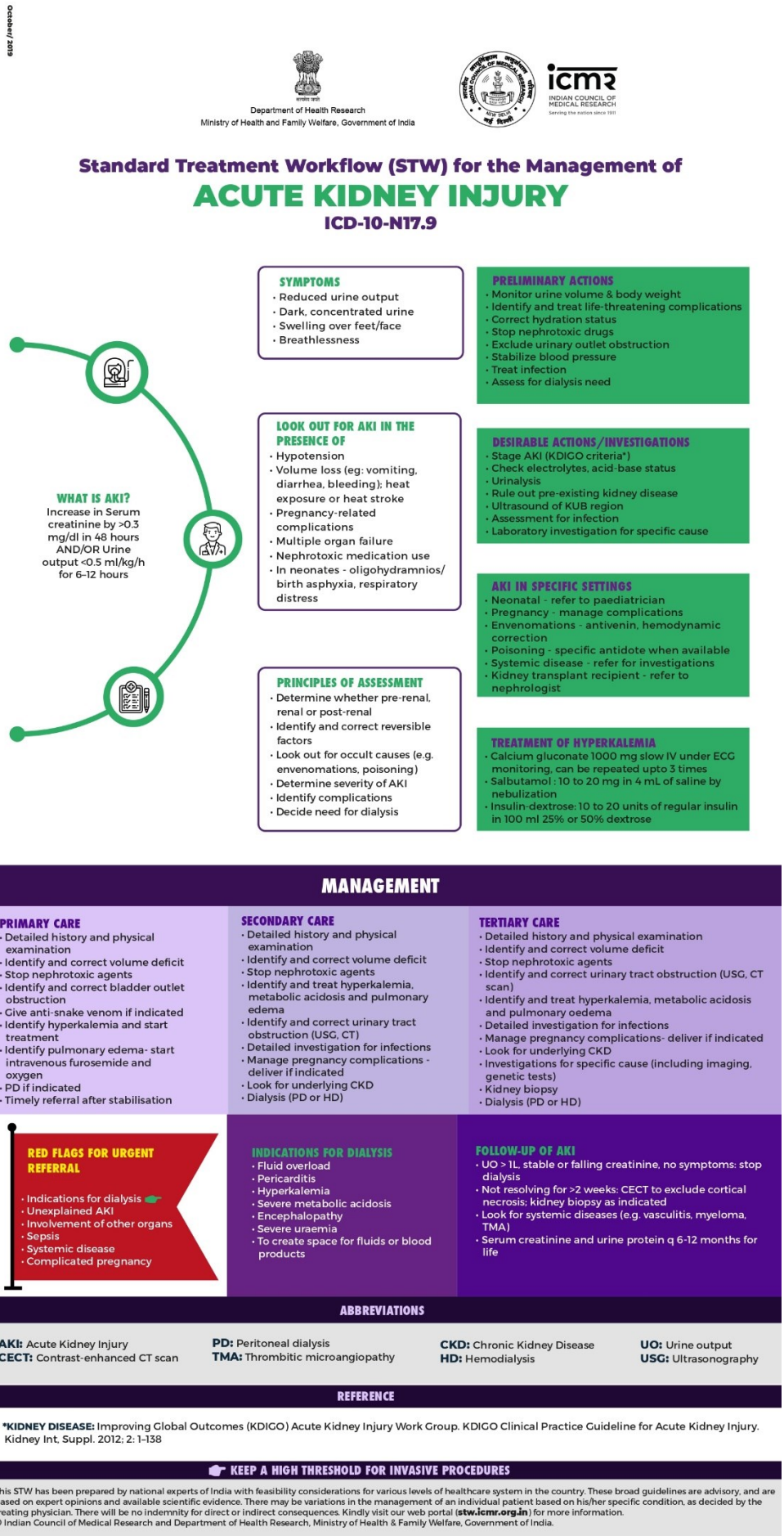
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Standard Treatment Workflow (STW) for the Management of
ACUTE KIDNEY INJURY
ICD-10-N17.9
WHAT IS AKI?
Increase in Serum creatinine by >0.3 mg/dl in 48 hours AND/OR Urine output <0.5 ml/kg/h for 6–12 hours
SYMPTOMS
· Reduced urine output
· Dark, concentrated urine
· Swelling over feet/face
· Breathlessness
LOOK OUT FOR AKI IN THE PRESENCE OF
· Hypotension
· Volume loss (eg: vomiting, diarrhea, bleeding); heat exposure or heat stroke
· Pregnancy-related complications
· Multiple organ failure
· Nephrotoxic medication use
· In neonates - oligohydramnios/ birth asphyxia, respiratory distress
PRINCIPLES OF ASSESSMENT
· Determine whether pre-renal, renal or post-renal
· Identify and correct reversible factors
· Look out for occult causes (e.g. envenomations, poisoning)
· Determine severity of AKI
· Identify complications
· Decide need for dialysis
PRELIMINARY ACTIONS
· Monitor urine volume & body weight
· Identify and treat life-threatening complications
· Correct hydration status
· Stop nephrotoxic drugs
· Exclude urinary outlet obstruction
· Stabilize blood pressure
· Treat infection
· Assess for dialysis need
DESIRABLE ACTIONS/INVESTIGATIONS
· Stage AKI (KDIGO criteria*)
· Check electrolytes, acid-base status
· Urinalysis
· Rule out pre-existing kidney disease
· Ultrasound of KUB region
· Assessment for infection
· Laboratory investigation for specific cause
AKI IN SPECIFIC SETTINGS
· Neonatal - refer to paediatrician
· Pregnancy - manage complications
· Envenomations - antivenin, hemodynamic correction
· Poisoning - specific antidote when available
· Systemic disease - refer for investigations
· Kidney transplant recipient - refer to nephrologist
TREATMENT OF HYPERKALEMIA
· Calcium gluconate 1000 mg slow IV under ECG monitoring, can be repeated upto 3 times
· Salbutamol : 10 to 20 mg in 4 mL of saline by nebulization
· Insulin-dextrose: 10 to 20 units of regular insulin in 100 ml 25% or 50% dextrose
MANAGEMENT
PRIMARY CARE
· Detailed history and physical examination
· Identify and correct volume deficit
· Stop nephrotoxic agents
· Identify and correct bladder outlet obstruction
· Give anti-snake venom if indicated
· Identify hyperkalemia and start treatment
· Identify pulmonary edema- start intravenous furosemide and oxygen
· PD if indicated
· Timely referral after stabilisation
SECONDARY CARE
· Detailed history and physical examination
· Identify and correct volume deficit
· Stop nephrotoxic agents
· Identify and treat hyperkalemia, metabolic acidosis and pulmonary edema
· Identify and correct urinary tract obstruction (USG, CT)
· Detailed investigation for infections
· Manage pregnancy complications - deliver if indicated
· Look for underlying CKD
· Dialysis (PD or HD)
TERTIARY CARE
· Detailed history and physical examination
· Identify and correct volume deficit
· Stop nephrotoxic agents
· Identify and correct urinary tract obstruction (USG, CT scan)
· Identify and treat hyperkalemia, metabolic acidosis and pulmonary oedema
· Detailed investigation for infections
· Manage pregnancy complications- deliver if indicated
· Look for underlying CKD
· Investigations for specific cause (including imaging, genetic tests)
· Kidney biopsy
· Dialysis (PD or HD)
RED FLAGS FOR URGENT REFERRAL
· Indications for dialysis
· Unexplained AKI
· Involvement of other organs
· Sepsis
· Systemic disease
· Complicated pregnancy
INDICATIONS FOR DIALYSIS
· Fluid overload
· Pericarditis
· Hyperkalemia
· Severe metabolic acidosis
· Encephalopathy
· Severe uraemia
· To create space for fluids or blood products
FOLLOW-UP OF AKI
· UO > 1L, stable or falling creatinine, no symptoms: stop dialysis
· Not resolving for >2 weeks: CECT to exclude cortical necrosis; kidney biopsy as indicated
· Look for systemic diseases (e.g. vasculitis, myeloma, TMA)
· Serum creatinine and urine protein q 6-12 months for life
ABBREVIATIONS
AKI: Acute Kidney Injury
CECT: Contrast-enhanced CT scan
PD: Peritoneal dialysis
TMA: Thrombitic microangiopathy
CKD: Chronic Kidney Disease
HD: Hemodialysis
UO: Urine output
USG: Ultrasonography
REFERENCE
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KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES
This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (stw.icmr.org.in) for more information.
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