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THE UNIVERSITY OF NEWCASTLE AUSTRALIA | HUNTER NEW ENGLAND NSW HEALTH

HMRI Hunter Medical Research Institute

Acute Stroke Nursing

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Defining ‘Acute’…

- First 48 hrs?
- First 72hrs?
- First 7-14 days?
- Admission period before transfer to rehab-specific facility?
- Acute versus hyper-acute?
- Acute versus rehab?

The Stroke Team

- Medical staff
- Nurses
- Physios
- OTs
- Speech Path
- Dietitians
- Psychology/ counselling
- Social work
- Ophthalmology
- Therapy assistants
- Pharmacists
- Families and carers
- Catering staff
- Volunteers
- Other medical staff (radiology etc)
- Other therapy staff, (audiology etc)
- Personal/ social care
- Support groups
- Transport services
- Etc etc etc!!!!!!

The 24 /7 Stroke Team

- Nurses
- Families and carers

Essential nursing care – eg Roper Logan Tierney model

- Maintaining a safe environment
- Breathing
- Mobilizing
- Eating & drinking
- Eliminating
- Dying

- Personal cleansing & dressing
- Communicating
- Controlling body temperature
- Working & playing
- Expressing sexuality
- Sleeping

Dependence←---------- ----------→Independence

Acute Stroke Nursing

1. Patient safety – assessment and monitoring; prevention of complications, risk management
2. Promotion of recovery and rehabilitation; co-ordination of care and treatment
3. Management of patient problems
4. Education and information sharing, including for healthy living and secondary prevention
5. Psychological support and/ or advocacy
6. Preparation for onward referral / transfer of care
7. Leadership, strategic planning, service development

1. Patient Safety – assessment and monitoring; risk management, prevention of complications

Assessment & monitoring: thrombolysis via iv r-tPA

Setting: pre/ intra-hospital resources (staff, imaging, expertise)

Patient selection: inclusion / exclusion criteria: time window (ECASS-3), patient characteristics inc BP <185/110

Management pathways: monitoring & intervention

NSF Acute GL 2007

Other options:

Newer imaging - assesses potential for penumbra salvage/ extend time

Other agents – tenecteplase, reteplase, desmoteplase, nanobubbles

Other routes – intra-arterial

Other techniques - mechanical thrombolysis, the MERCI retriever

Role of nurse in thrombolysis

- Develop & drive implementation of ED fast-track protocols
- ED 1st response – triage
- Co-ordination of fast-track pathway
- Drug administration; monitoring
- Patient/ carer education, advocacy
- MD education, training, advocacy
- (Data management; SITS-MOST; Audit)

Thrombolysis monitoring protocols

- Cardio-BP monitoring every 15 min/ 1st 2 hours;
  every 30 min/ next 6 hours,
  every hour/ 18 hours.
  Alert Dr if systolic >180 mmHg, diastolic >105 mmHg on 2 readings 5–10 min apart
  If antihypertensive therapy, obs every 15min.
- Neurological observations with BP measurement, NIHSS and GCS

International Stroke Trial (IST-3) Stroke Nurse Collaborative Group

Barriers to thrombolysis

- Lack of nursing knowledge about thrombolysis for stroke
- Lack of necessary skill mix in the stroke centre
- Lack of fast-track organization & resources
- Nursing fears of the intracranial haemorrhagic side-effects
- Lack of appropriate stroke unit beds
- Consent issues

Surmountable: JHH rate now 4/ month, ≅ 10%

Acute Stroke Nursing : 1. contd Patient Safety – monitoring

Patients should have their neurological status (inc Glasgow Coma Scale) and vital signs inc pulse, BP, temperature, oxygen saturation, glucose, and respiratory pattern monitored and documented regularly during the acute phase, the frequency of such observations being determined by the patient's status.

NSF Acute GL 2007

- Blood pressure
- Heart rate and rhythm
- Respiratory rate, pattern, SaO2
- Neurological status
- Temperature
- Glucose

Blood pressure management

- Aim is maintain cerebral perfusion – penumbra salvage
- BP elevates to overcome increased ICP from haemorrhage / oedema
- Elevated BP, elevated risk of haemorrhage; low BP, hypoperfusion, penumbra cell death.
- Strong evidence for lowering BP for secondary prevention but acute BP therapy controversial - both high & low BP negatively affect outcomes. Studies in progress.

Blood pressure management

Acute stage consensus:
If extremely high BP (eg >220/120) exists, instituting or increasing antihypertensive therapy may be started, but BP should be cautiously reduced (e.g. by no more than 10-20%) and the patient observed for signs of neurological deterioration.

Pre-existing antihypertensive therapy may be continued (orally/ NGT) provided no symptomatic hypotension or other reason to withhold treatment *(COSSACS, CHHIPS).*

All patients after stroke or TIA, whether normotensive or hypertensive, should receive BP lowering therapy, unless contraindicated by symptomatic hypotension.

Commencement of new BP lowering therapy may occur prior to discharge or within first week after stroke or TIA.

NSF Acute GL 2007

Neurological status

- Standard, valid tools – GCS, NIHSS, SSS
- Education and training for competence,
  eg motor response to pain – nail bed / sternal rub?
  verbal response if dysphasic?
- Action plan:
  identify ‘margin of error’ v clinical change
  who to inform, steps to take

Heart rate and rhythm

- ECG changes <91% ischaemic stroke
  (Khechinashvili & Asplund 2002)
- Cardiac co-morbidity common
- AF common: 17.5%, of whom 77.5% known
  (Framingham: Lin et al 1995)
- Rhythm disturbance seen in 22% (Daniele et al 2002)
- Threatens penumbral perfusion
- Cardiac monitoring?

Respiratory rate, pattern, SaO2

- Hypoxia → cerebral hypoxia → threat to penumbral survival
- Monitor SaO^2 / administer O^2, hypoxaemia (PaO2 <95%)
- Position to prevent hypoxia, promote cerebral blood flow -
- Benefits of high-flow O^2 (not COPD)?
- Sleep apnoea

Glucose

- Hyperglycaemia common (20-50%) in acute stroke, all severity (McCormick et al 2008), 8 - 20% diabetic.
- Increases risk of death, more severe disability.
- Effect on stroke progression ?linked to lactic acidosis → damaging effect on neuronal function, contributing to vasogenic oedema.
- Tight control in med/ surg improves outcome
- GIST: NS effect on mortality but BP ⇓ with GKI.
- Current consensus:
  1st 24 - 48 hours maintain BSL 4 - 9mmols/l.
  Start GKI @ 10mmol/l (Europe), 11mmol/l (USA)

Temperature

- Fever or higher body temperature (>37^{oC} in 1st 24hrs – 1 week) significant Relative Risk of worse outcome:

Mortality	1.5
Glasgow Outcome Scale	1.3
Barthel Index	1.9
Modified Rankin Scale	2.2
Canadian Stroke Scale	1.4
Intensive Care Length of Stay	2.8
Hospital Length of Stay	3.2.

- ?Disturbance of central temperature regulation, acute phase response or concurrent infection.
- Infection in pyrexial stroke patients 20 - 57%.
- Actions: Monitor; Reduce by tepid sponging, reduced bed clothing, fan, antipyretics; antibiotics for infection
- Therapeutic hypothermia trials in progress

Acute Stroke Nursing :

1. contd Patient Safety – prevent complications

- Complications common, occur in < 60%

Falls	22-25%
Depression	≅ 30%
(anxiety, emotionalism)	
Urinary tract infection	10-44%
Chest infection	2-16%
Tissue damage	3-22%
Pain	<55%
Seizures	2-5%
DVT / PE	2-5%
Confusion / delirium	<13%

Falls: causes

- Reduced strength and balance, poor gait and physical weakness
- Foot problems and footwear
- Sensory deficits e.g. visual problems, poor hearing
- Cognitive and perceptual problems e.g. neglect, altered judgement etc
- Medical conditions e.g. acute illness, cognitive decline, postural hypotension
- Fear of falling
- Hurrying, altered environment, space & furniture layout, poor lighting

Falls management

Multi-factorial falls risk assessment, to include:

- Explore history of falls & fear of falling
- Assess:
  gait, balance, mobility, muscle strength, osteoporosis risk, functional ability in ADLs visual & cognitive impairment
  neurological examination,
- Urinary incontinence
- Home hazards
- Cardiovascular examination, medication review.

Falls prevention intervention to modify risk factors

Depression

- Screening:
  - When?
  - What tool?
  - By whom?
- Assessment – psychology / psychiatry
- Intervention:
  - Counselling / Therapeutic Nursing
  - Motivational Interviewing
  - Problem-solving
  - Family Support Intervention
  - Pharmacological

Urinary Tract Infection

- Catheterisation!
  UK 2006 Audit **29%** catheterised, 35% (10% all stroke admissions) for urinary incontinence
  Local audit 137/ 400 **(34%) catheterised**
  34 UTI with IDC, 18 UTI no IDC
- Retention? 9/315 = 2.8%
  '**Patients should not have an indwelling (urethral) catheter inserted in the first 48 hours unless indicated to relieve urinary retention'.** National Clinical Guideline for Stroke 3rd Ed 2008
- Incontinence: Assess and manage

Chest Infection

Predisposing factors:

- Dysphagia – 40-60%. May be:
  - silent
  - chronic, predate / be unrelated to this stroke
  - linked with increased stroke severity, poorer prognosis
- Tube feeding – NG, PEG, PEJ
- Postural instability, linked with reflux
- Malnutrition
- Poor mouth care/ dental caries

Significantly extends length of hospital stay / cost

Delays / deters rehab

Acute Stroke Nursing :
1. Patient Safety – prevent complications contd

- Tissue damage 3-22%
- Pain <55%
  - shoulder pain / subluxation 5-80%
  - central post-stroke 5-20%
  - musculo-skeletal - common
- Seizures 2-5%
- DVT / PE 2-5%
  - CLOTS
- Confusion / delirium <13%

Specialist positioning, movement & handling; otherwise – 'good nursing care'

Acute Stroke Nursing : 1. contd Patient safety–risk assessment

- Manual handling
- Swallow function
- Nutritional risk
- Falls risk
- Mood state
- Pain
- Communication, cognition, sensory function
- Tissue/ pressure damage

2. Promotion of recovery and rehabilitation; co-ordination of care and treatment

Promotion of recovery & rehab – 'all of the above!'

Especially

- Enable patients to reclaim self-care by adopting an informed 'hands-off' approach instead of 'doing for' or 'doing to' patients
- Harmonising efforts of patients and health care professionals: 'the glue'
  'Sometimes an invisible contribution, co-ordination is most noticed when it is lacking'
- Oversight of goal-setting

Effective goal setting with patients

- Patient engagement is imperative
  policy must be flexible so patients can engage as suits them
- Starts by establishing patients' long term goals
- Patients must be able to maintain hope that long term goals can be achieved. Only patients revise long term goals
- Links between short term goals & long term goals,
  short term goals & team actions - must be clear
- SMART short term goals:
  Specific, Measurable, Achievable, Relevant, Time-limited
- Short term goals should identify who, with patient & family, is responsible for guiding/ supporting the patient to achieve the goal, and how they will do this.
- If patients' energy, strength, balance, safety vary through day/ week, short term goals should recognise this.
- Progress toward goal achievement must be evaluated regularly, & next round of goals set. 1-2 weeks?
- Everyone must have ready access to documented goals.
- Goals and goal attainment = evidence of progress

3. Management of patient problems

- Commence collection of background information (housing, leisure, hobbies etc): forward planning
- Specific care activities:
  Assessment and management of tissue viability
  Assessment and management of continence
  Recognition and management of dysphagia/ mealtimes
- Ensuring the patient has adequate rest and sleep
- Concordance with secondary prevention measures
- Medication management and self medication programmes
- ‘Carry-over’ of therapies

4. Education and information sharing

Patient and family education involves:

- Explaining the nature and purpose of rehabilitation
- Explaining the roles of health care professionals, patients and families in rehabilitation
- Explaining differences between acute care & rehabilitation
- Setting goals relevant to the patient with the patient
- Ensuring timely communication of information between patient and/or family and health care professionals
- Ensuring timely and appropriate communication of information between health care professionals
- Stroke risk factor assessment: translation and individualisation of secondary prevention information

5. Psychological support / advocacy

- Helping patients and families cope with and adjust to what has happened to them
- Consideration of cultural differences
- Psychological support to minimise trauma
- ‘Presence’; ‘therapeutic nursing’

6. Preparation for onward referral / transfer of care

- Starts from Day One
- Co-ordination & prioritisation of assessment & progress information
- Processing of social information
- Negotiation of care plan between team, patient and family
- Onward referral to specialist setting/ team
- Transition management

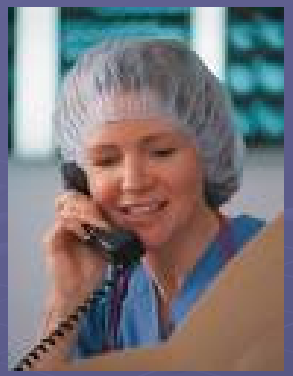
7. Leadership, strategic planning, service development

Role modelling expert patient care:

- Advanced clinical & decision making skills
- Caseload / patient workload management
- Health promotion:
  risk assessment
  strategy development with patient & family
  referral / recruitment of other agencies

7. Leadership, strategic planning, service development contd

- Demonstrates mentorship, preceptorship, teaching, facilitation, professional supervisory skills
- Articulates/ communicates a vision of nursing practice development, within & beyond current scope of practice
- Contributes to professional and health policy at local, regional, national level
- Contributes to service planning
- Identifies need and leads development of clinical standards



Thank you

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Table 5: Minimum recommended stroke unit staffing –FTE per 10 beds

Professional Group	**Median FTE**
Dietitian	0.3-0.5
Medical	1-2 #
Nursing	10-13 ##
Occupational Therapy	1-1.5
Physiotherapy	1-2
Psychology	0.3-0.5 ###
Social work	0.6-1.0
Speech Pathology	0.6-1.2

Medical includes mix of senior, junior and advanced trainees and covers

Urinary Incontinence

Main types of UI

- ***Urge UI:*** little warning, urgent need to void, unable to hold on
- ***Stress UI***: urinary leakage linked with increased abdominal pressure
- ***Mixed UI***: involuntary leakage with urgency & exertion, effort, sneezing or coughing.
- ***Functional UI***: failure to manage toileting due to factors other than physiological bladder control
- ***Voiding difficulties:*** outlet obstruction or detrusor hypoactivity.

Assessment of Incontinence

- Relevant medical, surgical and obstetric history
- Urinary/bowel symptoms/ how they differ from normal patterns
- Onset of symptoms, whether related to specific activities
- Medications, prescribed and OTCs
- Cognitive ability and communication skills
- Functional capacity (mobility, dexterity, hearing, vision etc)
- Aids and appliances used/ needed (for mobility/dexterity)
- Attitude to problem, how symptoms affect daily living and desire for treatment
- Social and environmental factors
- Urinalysis
- Urinary frequency / volume chart, recorded for 3-5 days
- Fluid Intake
- Constipation
- Abdominal palpation (urinary retention; constipation)
- Post voiding residual urine (bladder scan)
- Skin health / soreness / rash in peri-anal, genital, groin area
- Functional assessment of toileting skills

Management of Incontinence

All patients with loss of bladder control at two weeks should:

- **Be assessed for other causes of incontinence → treated**
- **Have active plan of management documented:**
  Simple treatments, eg bladder re-training, pelvic floor exercises, external equipment first
  Only have IDC if other management fails
- **Only be discharged home with incontinence after family or patient fully trained, arrangements for supply of continence aids/ services in place.**
- **Ditto for loss of control over bowels**
- Referral for specialist assessment/ treatment if appropriate

Screening & Assessment

- Swallowing screening: a procedure designed to detect any clinical indicator of potential neurological deglutition dysfunction/ aspiration risk.
- Swallowing assessment: a process including observation with a range of textures/ consistencies, resulting in detailed description of the clinical function of component phases of swallowing, usually accompanied by judgement of degree of dysfunction/ aspiration risk.

Nurse - led stroke follow-up clinic

- Secondary Prevention
- (B/P, weight, diet, information re-smoking etc)
- Physical/ medical status
- (medications, complications, pressure areas, continence, falls, etc)
- Functional Ability (Barthel, O.H.S,MMSE)
- Social/environmental issues
- (equipment, benefits, support)
- Mood (HADS)
- Carer/family issues (CSI)