Dehydration
The Hidden Epidemic

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✵ *Captive thinking* ✵

From acute care clinical staff

"so you're going to tell them how to give the old lady a drink of water"

From an aged care manager

"there are different levels of dehydration, talk about flow charts and the biochemistry"

From an interested consumer

"they should let them go out for a beer"

From an concerned colleague

"just google it, the art is in not letting the audience see you did that"

From my mind

"a systems approach…, make connections from the facility's gardener to the hospital"

✵ Objective ✵

Objectives

- To describe the clinical risks for dehydration of older people in residential aged care
- To describe potential solutions using a risk management approach

Presentation Outline

- Part One: Clinical Risks for older people
  - What's the evidence?
  - What are the consequences?
- Part Two: Risk management
  - What are the risk factors?
  - How to recognize the risk?
  - How does it present?
- Part Three: Application & Practice
  - What are the options for managing hydration?
  - What is a systems approach?

✵ Part One ✵

Clinical Risks for older people in Residential Aged Care

What's the evidence that..,

- Frail older people are particularly susceptible to dehydration?
  - Dehydration occurs in 31% of residents over 6 months
  - Nearly all residents consume less than the recommended daily intake

What are the potential consequences?

- Constipation
- Falls
- Medication toxicity
- Urinary and respiratory tract infection
- Delirium
- Renal failure
- Poor wound healing
- Electrolyte imbalance
- Seizure

What's the evidence that consequences catastrophic?

- Significant cause of mortality & morbidity
- 34% RACF residents admitted to hospital dehydrated
- mortality rate of 45% if dehydrated & hospitalised

❋ Part Two ❋

Risk management

What is dehydration?

- Definitions
- Salt & or water loss
  - Isotonic: same amount of salt & water
  - Hypotonic: more salt than water (Na 135-)
  - Hypertonic: less salt than water (Na 145+)
- Clinical or biochemical
  - 3% body weight

Risk factors: medical

- Cognitive impairment
- Fully dependent residents
- Renal failure, diabetes mellitus
- Gastro-intestinal losses-diarrhea
- Fever
- Medication
  - Diuretics
  - Opiates
- Most enteral feeds do not have free water

Risk factors: age related

- Functional limitations restrict access to fluids
- Reduced total body water, less reserve
- Physiological responses diminished
  - Hormonal responses
  - Central thirst mechanism
  - Insensible loss through skin & lung

Risk factors: other

- Resident preference
  - E.g., incontinence may restrict fluid intake to prevent episodes of incontinence
- Environmental
  - Periods of heat
  - Limitations that restrict access to fluids
  - Staff training & knowledge

How does it present?

- Common signs of dehydration
  - Dry mucous membranes
  - Decreased tissue turgor
  - Postural hypotension
  - Confusion, disorientation
- Postural hypotension
  - Lying and standing, at 1 minute
    - Systolic BP drop of 20mmHg & HR increase by 10 beats per minute
  - 1 in 5 older person positive due to factors other than fluid depletion!!!

✵ Part Three ✵

Application & Practice

What are the options?

- Prevention
  - early identification and management
- Treatment
  - Type & severity of dehydration: salt & or water

Treatment options

- RACF or acute hospital care
- Hospital care
  - Hemo-dynamically unstable
  - Co-morbid & complex conditions
- RACF care
  - end of life
  - functional decline
  - better to treat at facility better outcomes

Re-hydration therapy

- Oral
- Enteric
- Subcutaneous-1500ml per day, Normal saline best tolerated, risk of infection
- Intravenous

Management

- Daily weigh
- Fluid-balance charts
- Oral hydration
- Blood tests to evaluate, salt, water & renal function

Calculating a fluid goal

- 100ml/kg first 10kg [1000ml]
- 50ml/kg next 10kg [500ml]
- 15ml/kg rest of weight [(wt-20) x 15]
- OR
- 1500ml per day as minimum

Monitoring urine

- Impending
  - Specific gravity
    - [1.020-1.029]
  - Color
    - [dark yellow]
  - Volume
    - [800 to 1200ml/day]
- Dehydration
  - Specific gravity
    - [>1.029]
  - Color
    - [brown]
  - Volume
    - [<800ml/day]

✵ A systems approach ✵

Principles of clinical risk management

- Situations are easier to fix than people
- Change is easier to institute with a well-trained & motivated workforce
- Multiple approaches required
  - Person: less reliance on memory and vigilance
  - Task: standardisation and simplification of work processes
  - Workplace: good team functioning
  - Organisation: appropriate leadership and creation of safe working conditions

Promote systems approach

- P,P & Procedures for individuals & facility
  - Awareness, screening or recognition of the risk for dehydration
  - Assess and plan care to promote hydration
  - Implement and evaluate care plan
  - Contingency plan should dehydration occur
  - Collect and analyzing information about episodes of dehydration
  - Responding to these episodes by changing systems of care
  - Communication and continuous monitoring of the new initiatives

✵ Case studies ✵

Case study-learning example

- 93yo
- Female
- Dementia
- Parkinson's disease
- Fracture hip
- Pneumonia
- "End of life"

- Educate family about effects of disease progression
- Promote interest and enjoyment in meals and fluids
- Good oral care
- Care directives

Case #1

- 78 y.o
- Male
- Dementia
- Diabetes mellitus
- Heart failure
- Ambulant

Case #2

- 86y.o
- Female
- Stroke
  - Hemiplegia
  - Dysphagia
- Cognitively intact
- Daily trip with family to tennis

Case #3

- 92 y.o
- Lady
- Heart failure
- Incontinent
- Mild memory impairment

✵ *Clinical research* ✵

Oral Hydration Trial [Keller]

- Goals
  - Risk of hydration assessed & documented
  - Fluid intake monitored daily with fluid balance charts
  - Fluid intake is greater than 1600ml per day
- Action Research
  - 6 sites
  - 229 HLC residents
  - 5 sites eventually withdrew

Oral Hydration Trial [Keller]

- Results
  - 40% to 100% screen & document
  - 0% for the other two goals
- Staff comments
  - Goal 2: Barriers
    - Not feasible to monitor all
    - Tool should reflect risk
  - Goal 3: Barriers
    - Lack of dedicated fluid rounds
    - Not able to easily identify high risk
    - Information & reasons for fluids not consumed not addressed

✵ *A new approach* ✵

Systems of care

- Staff
- Work environment
- Equipment
- Policy and procedures
- Safety mechanisms
- Organisation
- Clinical care
- Environmental
- Social
- Communication
- Nutrition & food service
- Community relations

✵ Staff ✵

Staff

- Knowledge, skill & competence
- Why people violate good rules [Reason]
  - Illusion of control: 'I can handle it'
  - Illusion of invulnerability: 'I can get away with it'
  - Illusion of superiority: 'I'm very skilled'
  - Feelings of powerlessness: 'I can't help it'
  - Feelings of consensus: 'Everybody does it'
  - Feelings of consent: 'They'll turn a blind eye'

Staff

- Staff training, knowledge to be alert and intervene early
- Identify and treat factors contributing to dehydration
- Regular fluids offered every 1-2 hours
- Regular hydration rounds
- Prompt residents to drink

✵ *Work environment* ✵

Work environment

- Incorporate offering fluids into a routine
  - After shower, after a walk
  - Every time a staff member enters the room
- Regular fluids offered every 1-2 hours
- Regular hydration rounds
- Ensure fluids readily available to residents
- Happy hour

Equipment

Equipment

- Offer preferred drink
- Provide “wet” foods jelly, yoghurt, icy poles
- Provide glasses and cups that are appropriate
- Provide drinking straws

✵ *Policy & procedures* ✵

Policy and procedures

- Hydration
- Dehydration
- Measure fluid intake, Fluid balance chart
- Contingency planning

✵ *Safety mechanisms* ✵

Safety mechanisms

- Educate family about offering fluids
- Identify at risk patients for specific attention
- Identify high risk patients with symbol
- Volunteers
- Monitor urine volume, color, specific gravity

Conclusion [1]

- Take home message
- “Dehydration is a very common condition that is potentially fatal”
- “Dehydration is avoidable and reversible”

Conclusion [2]

- Objectives
  - To describe the clinical risks for dehydration of older people in residential aged care
  - To describe potential solutions using a risk management approach

Conclusion [3]

- Captive thinking
- Part One: Clinical Risks for older people
  - Very common
  - Significant mortality and morbidity
- Part Two: Risk management
  - Risk factors
    - Medical
    - Age related
    - Resident preference
    - Environment
  - Symptoms & signs

Conclusion [4]

- Part Three: Application & Practice
  - Options RACF or Acute Care
  - Re-hydration & monitoring
  - Fluid goals & urine
- Part Three: Systems approach
  - Principles of clinical risk management
    - Situations are easier to fix than people
    - Promote a systems based approach
  - Case studies
  - Clinical research
  - Systems of care
    - Staff, work environment, equipment, policy, safety mechanisms

References

- Keller M., Maintaining oral hydration in older adults living in Residential aged care facilities. Int J Evid Based Healthc 2006: 4:68-73
- Mentes J., Oral hydration in older adults. AJN June 2006; 106: 40-49
- Woodward M., Guidelines to effective hydration in Aged Care Facilities. December 2007. Heidelberg Repatriation Hospital Melbourne.
- Maintaining Oral Hydration in Older People. JBI Best Practice 2001. Vol 5 Issue 1.
- Reason J.

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