Joint Trust Guideline for the Management of: Infants and children presenting post seizure

A clinical guideline recommended for use

For use in:	Children's assessment unit, Buxton ward
By:	Medical and nursing staff
For:	Children presenting having had a seizure
Division responsible for document:	Women's and Children's services
Key words:	Child, seizure
Name of document author:	Dr Ruchi Arora, Dr Bina Mukhtyar
Job title of document author:	Consultant Paediatrician's
Name of document author's Line Manager:	Mary Anne Morris
Job title of author's Line Manager:	Chief of Services for Paediatrics
Supported by:	Dr S Nirmal Consultant Paediatrician JPUH
Assessed and approved by the:	Chair's action - Clinical Guidelines Assessment Panel
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Ratified by or reported as approved to:	Clinical Safety and Effectiveness Sub-board NNUH Clinical Governance Committee JPUH
To be reviewed before: This document remains current after this date but will be under review	28/07/2023
To be reviewed by:	Dr Ruchi Arora
Reference and / or Trust Docs ID No:	JCG0310
Version No:	4.1
Compliance links:	None
If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	N/A

This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

The Trust's guidelines are made publicly available as part of the collective endeavour to continuously improve the quality of healthcare through sharing medical experience and knowledge. The Trust accepts no responsibility for any misunderstanding or misapplication of this document

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Version and Document Control:

Version Number	Date of Update	Change Description	Author
4.1	28/07/2020	Reviewed and no clinical changes were needed	Dr Ruchi Arora, Dr Bina Mukhtyar

This is a Controlled Document

Printed copies of this document may not be up to date. Please check the hospital intranet for the latest version and destroy all previous versions

Quick reference guideline/s

See following algorithm and accompanying tables.

Objective/s

This guideline is for the infant or child presenting to the Children's Assessment Unit (CAU) having had a seizure, with or without fever, which has stopped. The management of a child who is seizing is covered in 'guideline for the management of generalised status epilepticus'. The development group assumes that health care professionals will use general medical knowledge and clinical judgement in applying the recommendations in this document to the management of individual patients. These recommendations may not be appropriate for use in all circumstances.

Rationale

Assessment, investigations (biochemistry and lumbar puncture in particular), admission and treatment are addressed. The guideline aims to aid junior doctors in recognising children who need further investigation, admission for observation and treatment and those who may safely go home. A Nationally developed, evidence based and consensus ratified guideline has been modified for local use. A brief description of the method of guideline development follows:

Evidence: A systematic review was performed in accordance with SIGN (Scottish Intercollegiate Guideline Network) methodology. Electronic databases (Medline, Embase, Cochrane and CINHAL) were searched from 1966 to March 2002. Articles were selected if they addressed the specific clinical question; personal reviews were excluded. The literature was appraised, graded, and synthesised qualitatively. Statements of recommendation were made. Grade A recommendations were included in the guideline. Grade B and C were subject to consensus development.

Consensus: An anonymous, postal Delphi consensus development was used. A National panel of 30 medical and nursing staff that frequently care for these children were asked to grade their agreement with the statements generated. They were sent the papers, appraisals, and literature review. On the second and third rounds they were asked to re-grade their agreement in the light of other panellists' responses. Consensus was defined as 83% of panellists agreeing with the statement.

In 2011, further literature search undertaken to update the guidance.

Broad recommendations

In brief: Clinical signs useful in assessing these children, with criteria for observation on CAU or admission to Buxton ward are given. Children with a first afebrile seizure do not routinely need biochemistry or an EEG. Children with a seizure and fever need careful assessment to exclude intra-cranial infection, and criteria to diagnose and treat for meningitis are given. Contraindications for lumbar puncture are given. High quality data on recurrence risk is given for counselling parents, and an information sheet is attached.

Clinical audit standards

Detailed within full guideline documentation.

Summary of development and consultation process undertaken before registration and dissemination

The authors listed drafted the guideline in consultation with paediatric medical staff and senior nursing staff in the paediatric unit. The full guideline (see Armon K, 2003) is published and available electronically, and has been updated with reference documents listed.

This guideline was reviewed in July 2020 by Dr Ruchi Arora, Dr Bina Mukhtyar and no clinical changes were necessary.

This version has been endorsed by the Clinical Guidelines Assessment Panel.

Distribution list/ dissemination method

The guideline will be distributed to CAU and Buxton ward and available on the intranet. It will be taught at the induction of new junior doctors to these areas.

References/ source documents

Chin RF; Neville BG; Peckham C; Bedford H; Wade A; Scott RC; 'Incidence, cause, and short-term outcome of convulsive status epilepticus in childhood: prospective population-based study'. *Lancet. 2006; 368(9531):222-9*

Waker DM, Teach SJ. ' Update on the acute management of status epilepticus in children'. *Curr Opin Pediatr. 2006 Jun;18(3):239-44.*

McIntyre J; Robertson S.; Norris E; Appleton R; Whitehouse W; Safety and efficacy of buccal midazolam versus rectal diazepam for emergency treatment of seizures in children: a randomised controlled trial'. *Lancet 2005; 366:205-10.*

McMullen J; Sasson C; Pancioli A; Silbergleit R. 'Midazolam versus Diazepam for the treatment of Status Epilepticus in children and young adults: A meta-analysis. *Acad Emerg Med 2010; 17(6): 575-582*

Berg A.; Berkovik, Brodie MJ. Revised terminology and concepts for organisation of seizures and epilepsies: 2005-2009 ILAE commission and classification. *Epilepsia 2010;51:676-685*

NICE Clinical Guideline 109: Transient loss of consciousness August 2010

NICE guideline CG137: National Clinical Guideline Centre; 'Epilepsies'; The diagnosis and management of epilepsies in adults and children in primary and secondary care:

Armon K, Stephenson TJ, MacFaul R, Hemmingway P, Werneke U, Smith S. 'An evidence and consensus based guideline for the management of a child after a seizure'. *Emergency Medicine Journal* 2003;20:13-20

See guideline documentation for full references.

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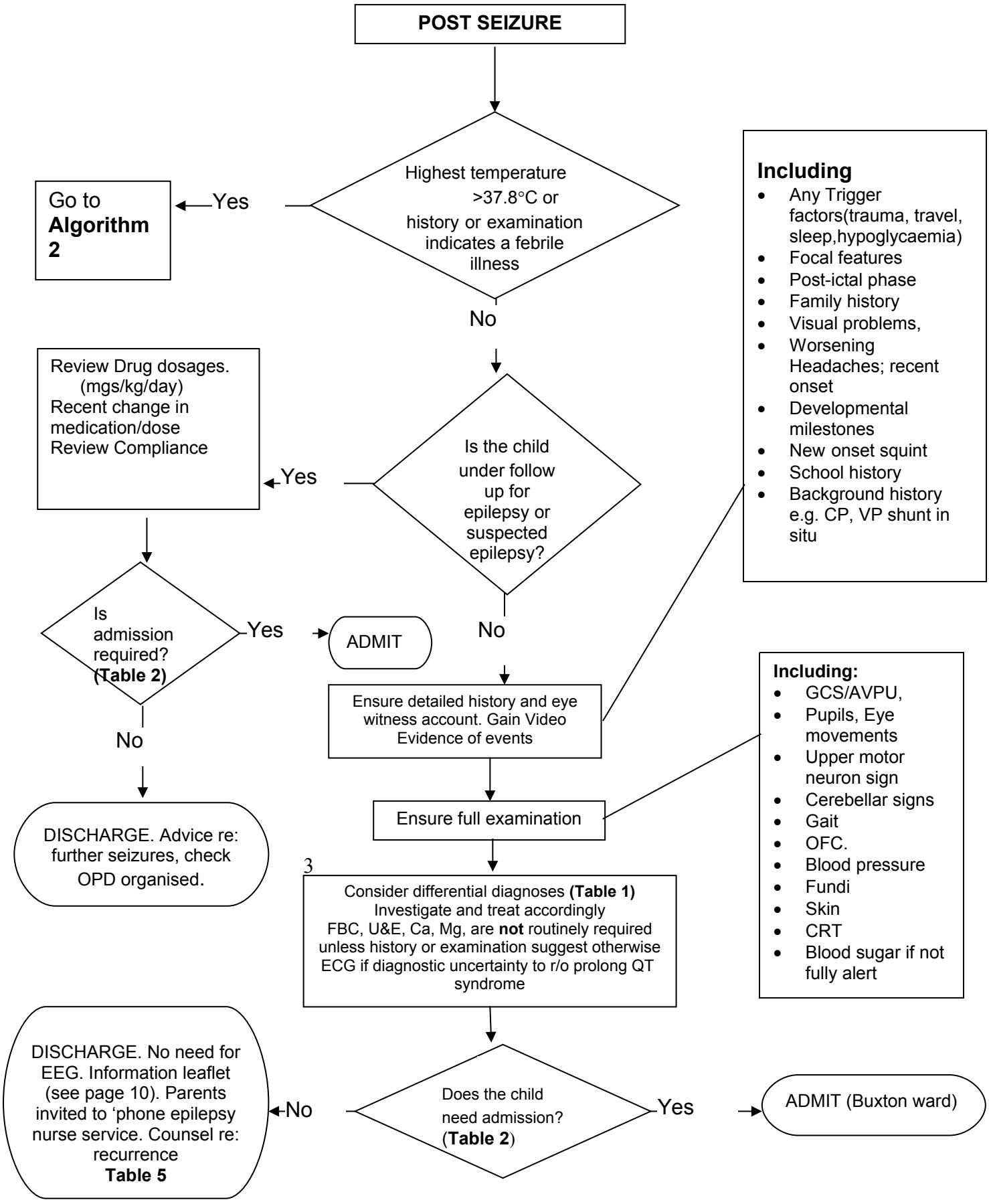
Algorithm 1



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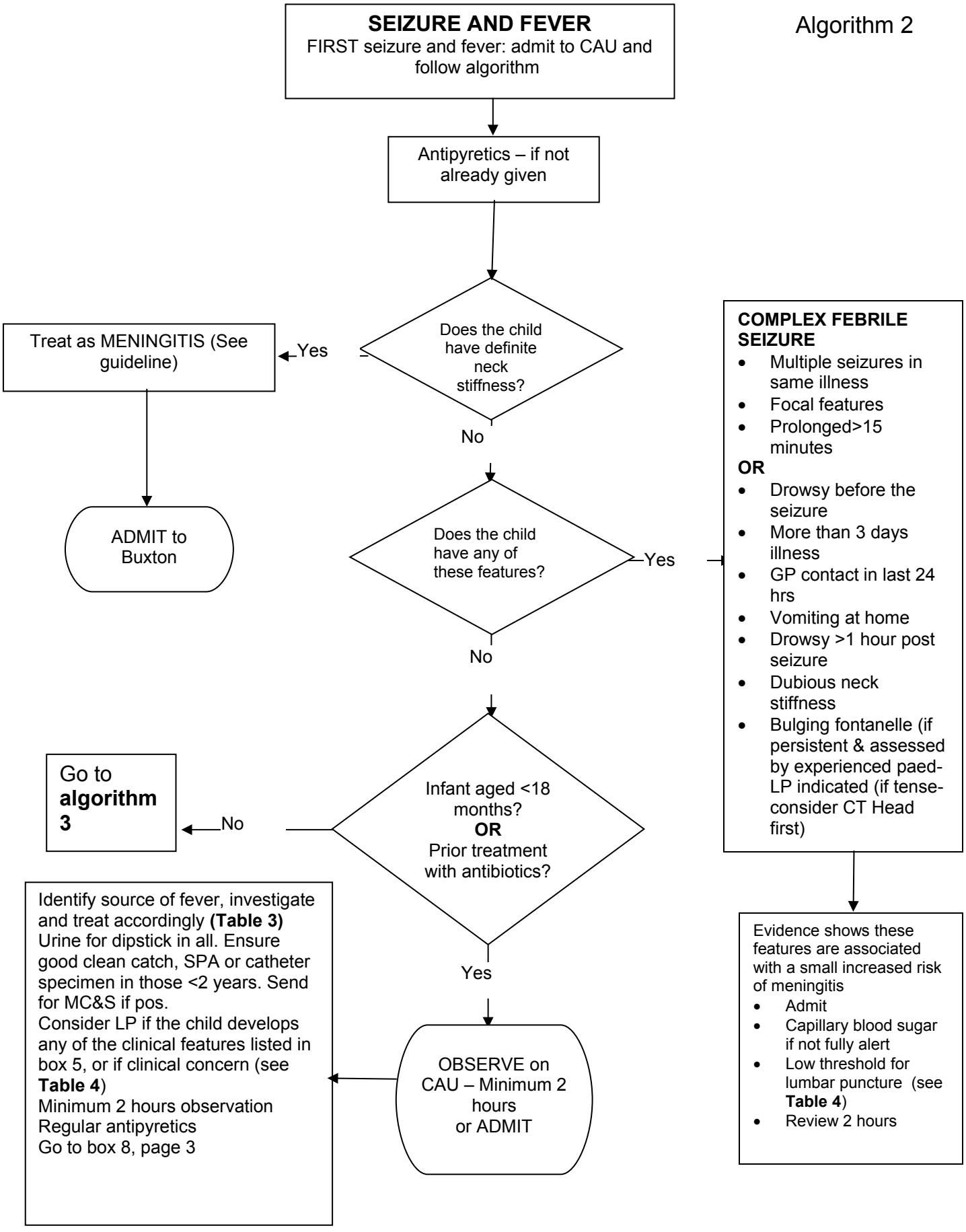
Algorithm 2



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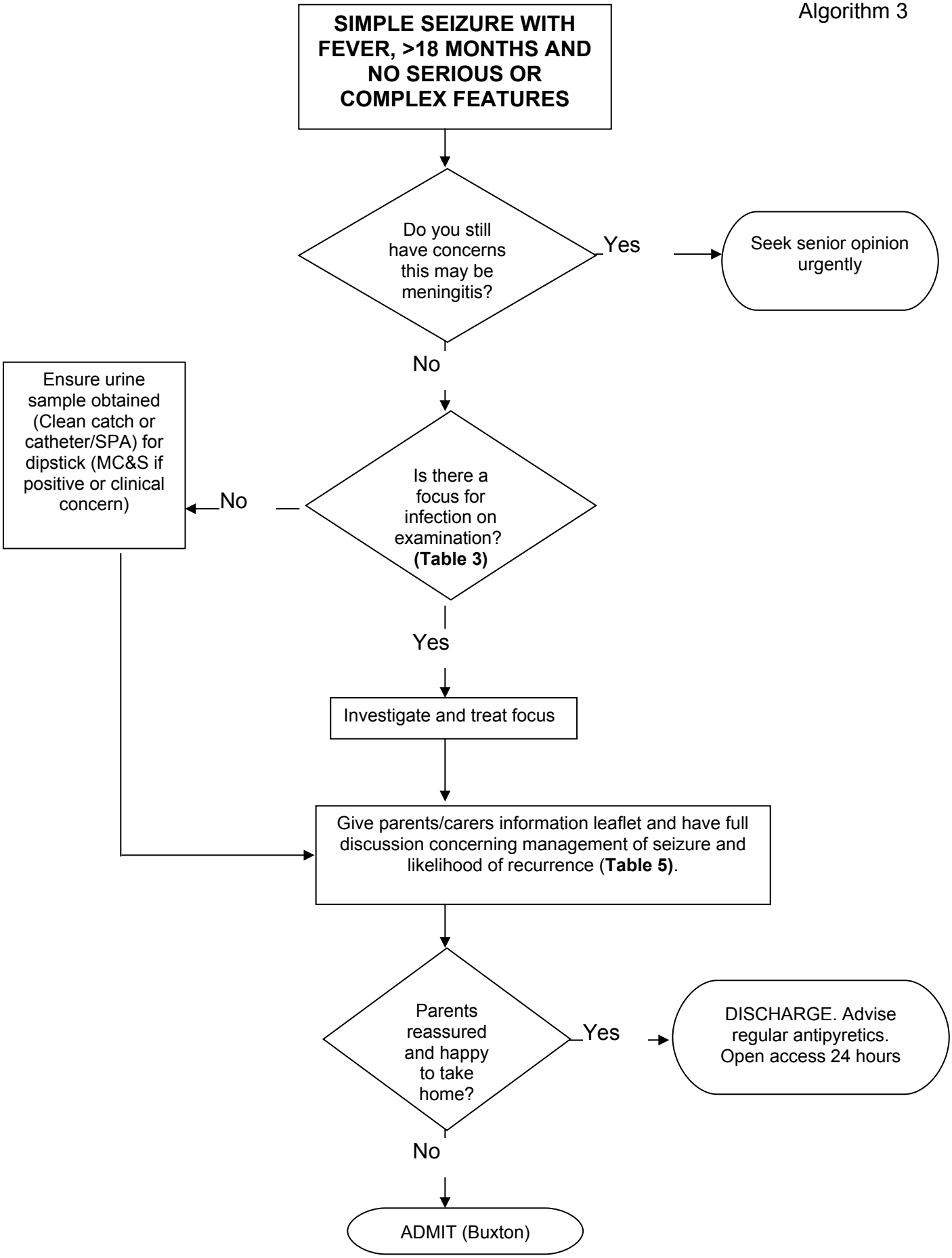
Algorithm 3



Seizure

- Episodes of excessive, abnormal muscle contraction, usually bilateral, which may be sustained or interrupted (International League Against Epilepsy Report 2001).

Febrile seizure

- An age related disorder almost always characterized by generalized seizures occurring during an acute febrile illness (International League Against Epilepsy Report 1989).
- This definition does not encompass an age cut off or temperature. Most studies define febrile seizure as 6 months to 5 years with either a history of a febrile illness or a documented temperature at presentation.
- Other conditions can cause a seizure associated with fever. These include intracranial infection / encephalitis and epilepsy, metabolic or neurodegenerative disease. All children with first episode of seizure and fever to be admitted to CAU

Table 1: List of differential diagnoses for the child presenting with a first afebrile seizure to hospital

Type of seizure	Cause
Isolated seizure	No cause found
Epileptic seizure	Generalised - tonic clonic seizures, absence seizures, myoclonic seizures Partial - benign rolandic, complex partial epilepsy
Acute symptomatic seizure	Intracranial infection (bacterial/viral, diffuse/localised) Ingestion (deliberate, accidental) Trauma (head injury, non accidental injury) Tumour Intracranial haemorrhage Hypertension Hydrocephalus Metabolic (low glucose, calcium, magnesium, high and low sodium
Neonatal/Early infant seizures (<3 months)	*In addition to the above causes:* Neonatal encephalopathy (from birth) CNS infections (acute and congenital) Fifth day fits Drug withdrawal Pyridoxine dependency
Other important differentials (not epileptic seizures)	Convulsive syncope - reflex anoxic seizure, vasovagal seizure (both neurally mediated syncopes), arrhythmias e.g.long QT (cardiac syncope), suffocation, non-epileptic attack disorder

Table 2: Criteria for admission of a child with an afebrile seizure to Buxton.

Category	Criteria/signs
Age	Less than 1 year (unless known epilepsy)
Neurology	***Glasgow coma scale (or equivalent) <15 (>1hour post fit)*** New neurological signs
Raised intracranial pressure	Papilloedema, tense fontanelle
Generally unwell	Irritable, disinterested, vomiting
Meningism	Kernig's positive, photophobia, neck stiffness
Complex seizure	Prolonged (>15 minutes), focal, recurrent
Signs of aspiration	Respiratory distress, need for oxygen, chest signs
High parent or carer anxiety	Parent's/ carers do not feel happy to take the child home following a full discussion

Table 3: Common differential diagnoses of children presenting with fever and seizure.

N.B. Viral infection, otitis media and tonsillitis account for 85-90% with the others making up 10-15% of all causes.

Cause for fever
Viral infection (e.g. upper respiratory tract infection, non specific viral illness, roseola, chicken pox and other exanthema, etc.)
Otitis media
Tonsillitis
Urinary tract infection
Gastroenteritis
Lower respiratory tract infection
Meningitis
Post immunisation
Post ictal fever (only likely after generalised seizure of >10mins)

Table 4: Contraindications for lumbar puncture

Category	Criteria/ signs
Impaired consciousness	Conscious level deteriorating post seizure, coma
Signs of septicaemic shock	Poor perfusion, low BP, tachycardia
Clinical diagnosis of invasive meningococcal disease	Rapid onset illness, typical haemorrhagic rash
Signs of raised intracranial pressure	Papilloedema, coma, abnormal posturing, abnormal pupillary responses, high BP, low pulse
Focal neurological signs	On clinical examination of cranial and peripheral nerves

Table 5: Prognosis of febrile and afebrile seizures

Risk	Percentage
Population risk of febrile seizure	2.7 to 3.3%
Risk of recurrence of febrile seizure following first seizure	29 to 35%
Risk of epilepsy following simple febrile seizures	1 to 2.4%
Risk of epilepsy following complex febrile seizures (prolonged >15 minutes, focal, multiple in 24 hours)	4.1 to 6%
Risk of a single afebrile seizure in childhood	1%
Risk of a recurrence following a first afebrile seizure	50%

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EPEN has produced a febrile seizure leaflet which is available https://www.networks.nhs.uk/nhs-networks/eastern-paediatric-epilepsy-network/information-leaflets on page 10/