Implement integrated care pathway

Luton and Dunstable University Hospital

RCPCH Epilepsy Quality Improvement Programme project team:

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National Audit results included within this case study acts as a guide only to performance standards. The service improvements made during the EQIP cannot be entirely attributed to the reported results.

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Project aim

To develop and implement an integrated care pathway for children admitted to hospital with seizures in 6 months.

Background

The team observed a lack of uniformity in the acute care received by children admitted with suspected epileptic seizures to the paediatric ward, particularly outside of normal working hours. The areas that particularly required improvement were history-taking, arranging appropriate investigations, and safety advice for parents/carers and patients, confirming the need for an integrated care pathway that provides children and young people and their carers with a standardised approach to providing high-quality care.

Area of focus

Prior to developing the pathway, the team engaged parents/carers with a survey to obtain feedback on how they felt about the care received during hospital admission. As expected, the response suggested inconsistency in the quality of care. Similarly, a survey taken by staff nurses and junior doctors suggested that an integrated care pathway for seizures would be beneficial in providing a high level of consistent care.

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Changes

- Updated the template for a document that is kept in the same place as the acute admission document in the acute paediatric assessment unit with modifications and additions specific to seizures in children.
- Hot clinics were introduced once a week to see patients who were required to be seen in person.
- The introduction of virtual clinics was useful for straightforward new and follow-up patients.
- Virtual MDT meetings increased team members' participation.
- The team found some of the new practices adopted during the pandemic were useful and efficient and will be continued post-pandemic (e.g., virtual meetings, working from home with IT-enabled services).

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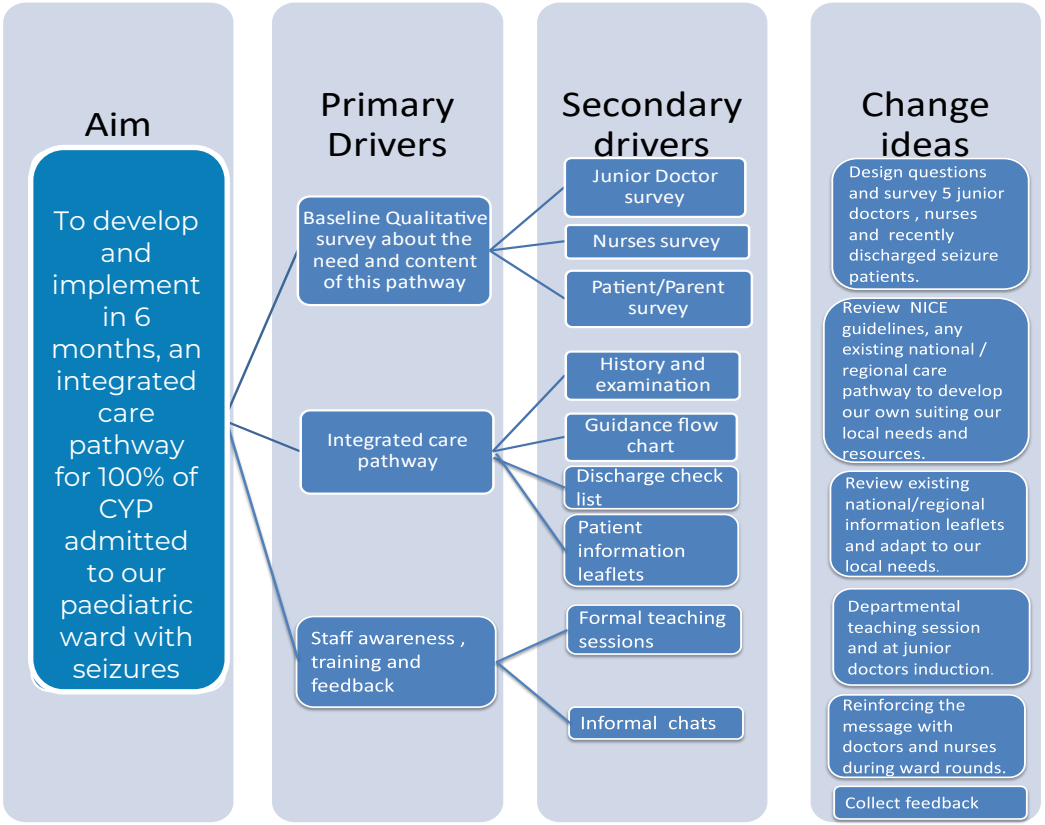
Project driver diagram



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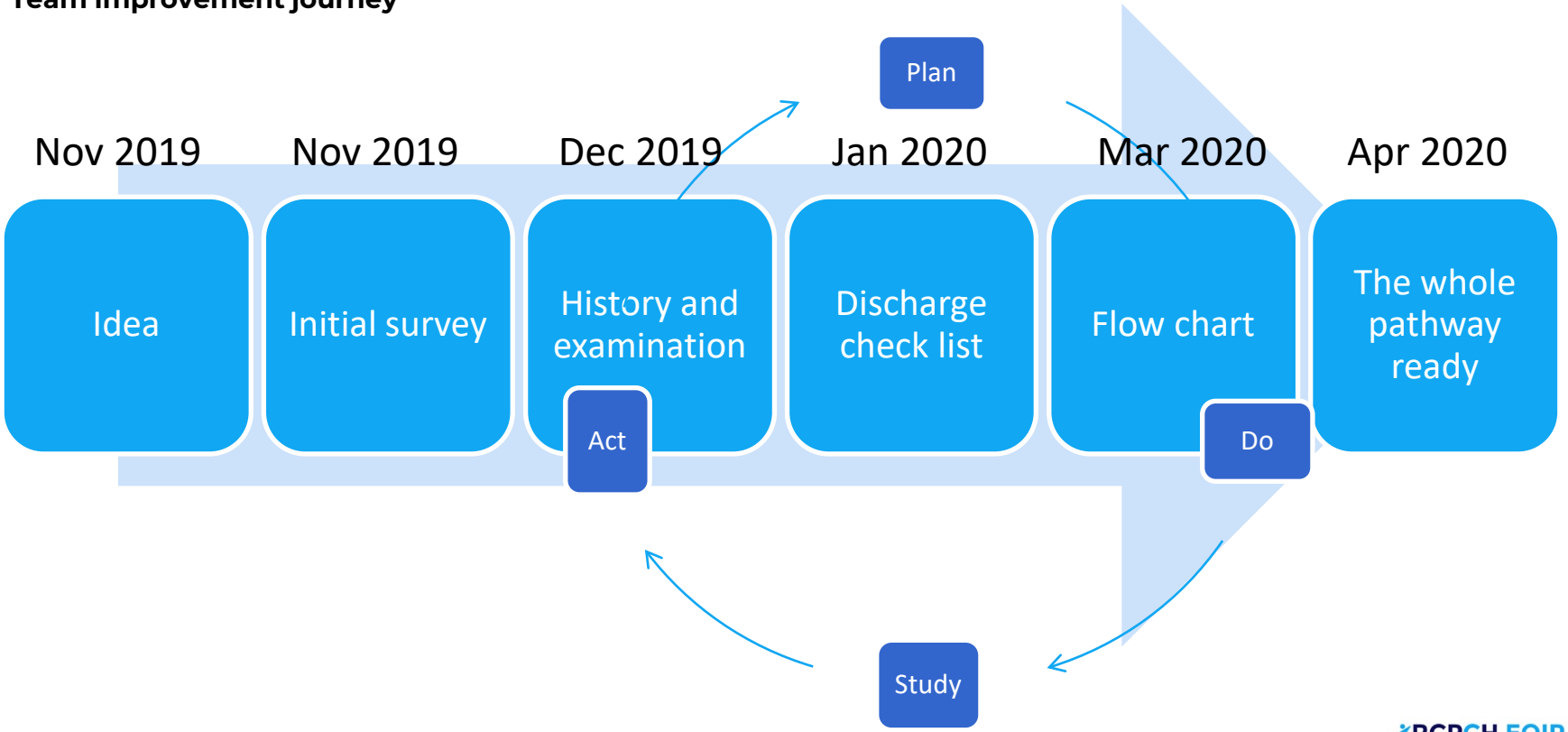
Team improvement journey



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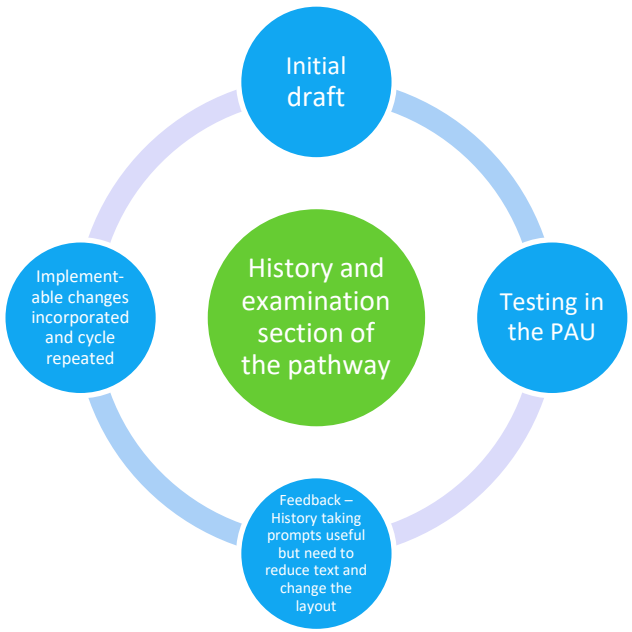
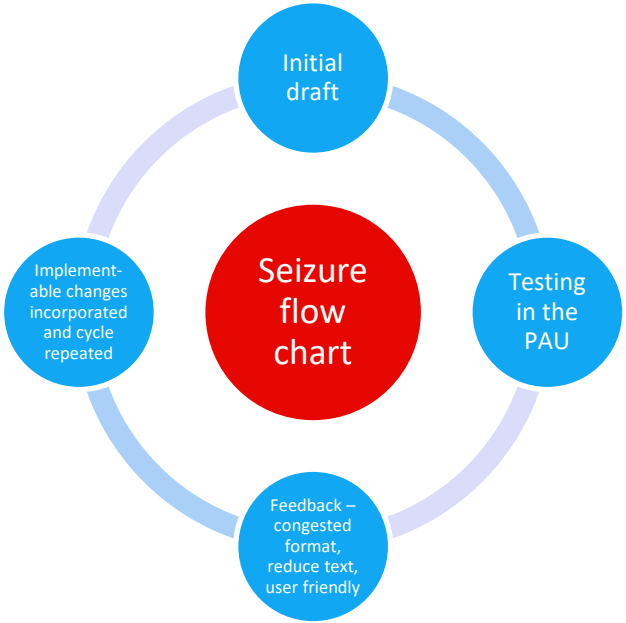
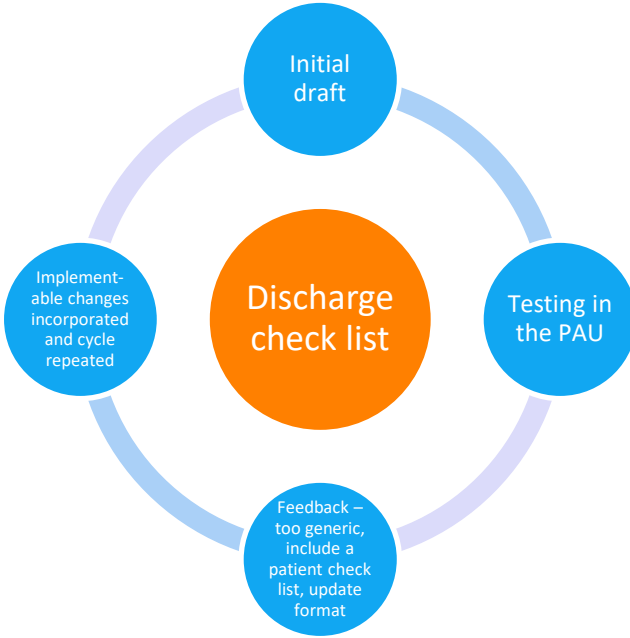
PDSA process of testing, measuring and making changes to the PAU documentation







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Results

The team agreed to divide the document into three broad sections to be tested:

1. History and examination
    - An initial draft was prepared, which included prompts for the history taker to use the document to cover important points in a good seizure history. This was tested with junior doctors in the acute admission unit. Feedback on improvements consisted of reducing text for the prompts in a user-friendly format and applying a uniform colour. The document went through several PDSA cycles until the changes were approved.
2. Flow chart for different types of seizures to guide doctors
    - An initial draft was prepared for children and young people admitted with different types of seizures. This was tested again by junior doctors on patients admitted with seizures. Constructive feedback received consisted of reducing the volume of text and redesigning a user-friendly layout.
3. Discharge check list for safe discharge
    - The initial draft for the discharge check list was prepared and tested before the flow chart. This chart is generic for all types of seizures. Feedback received consisted of changes to content and a more user-friendly format, e.g., incorporating a patient discharge checklist to ensure parents are happy with the information and training provided. The form was then re-tested until the changes were approved.

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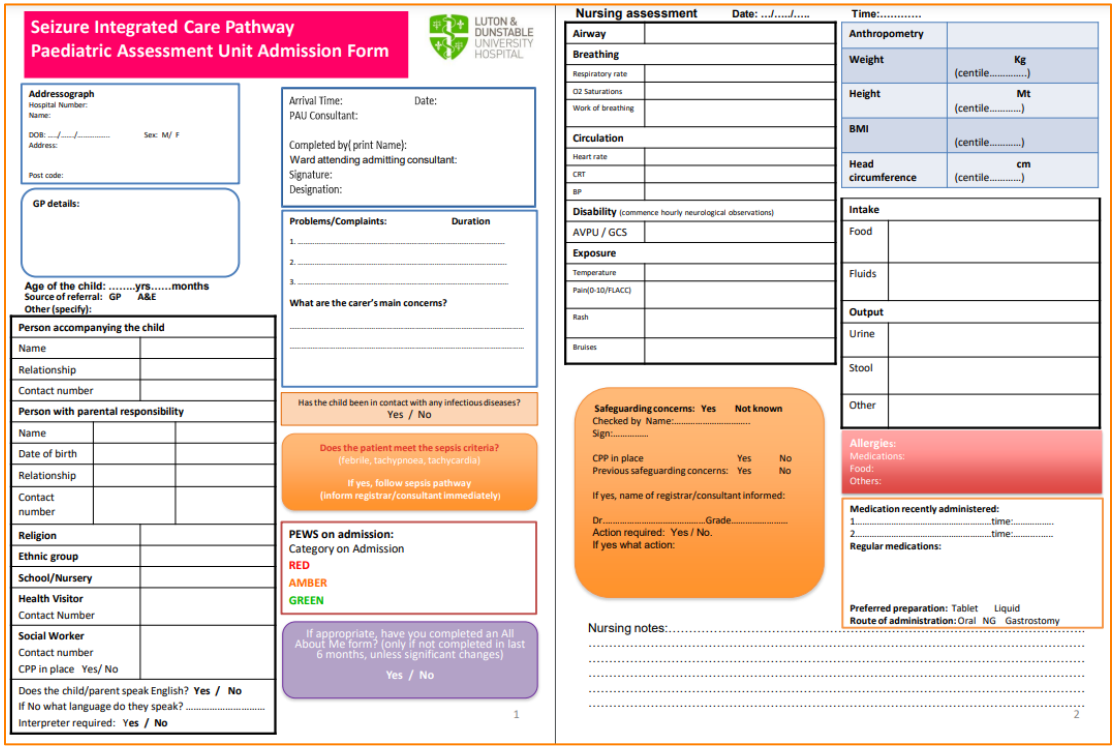
Example of history and examination document



Seizure Integrated Care Pathway
Paediatric Assessment Unit Admission Form

LUTON & DUNSTABLE UNIVERSITY HOSPITAL

Addressograph
Hospital Number:
Name:
DOB: ...../...../..... Sex: M/ F
Address:
Post code:

GP details:

Age of the child: .....yrs.....months
Source of referral: GP A&E
Other (specify):

Person accompanying the child	
Name	
Relationship	
Contact number	
Person with parental responsibility	
Name	
Date of birth	
Relationship	
Contact number	
Religion	
Ethnic group	
School/Nursery	
Health Visitor Contact Number	
Social Worker Contact number CPP in place Yes/ No	

Does the child/parent speak English? **Yes / No**
If No what language do they speak? .....
Interpreter required: **Yes / No**

1

Arrival Time: Date:
PAU Consultant:

Completed by(print Name):
Ward attending admitting consultant:
Signature:
Designation:

Problems/Complaints: **Duration**
1. .....
2. .....
3. .....

What are the carer's main concerns?
.....
.....

Has the child been in contact with any infectious diseases?
Yes / No

Does the patient meet the sepsis criteria?
(febrile, tachypnoea, tachycardia)
If yes, follow sepsis pathway
(inform registrar/consultant immediately)

PEWS on admission:
Category on Admission
RED
AMBER
GREEN

If appropriate, have you completed an All About Me form? (only if not completed in last 6 months, unless significant changes)
Yes / No

Nursing assessment **Date:** ../...../..... **Time:**.....

Airway	
Breathing	
Respiratory rate	
O2 Saturations	
Work of breathing	
Circulation	
Heart rate	
CRT	
BP	
Disability (commence hourly neurological observations)	
AVPU / GCS	
Exposure	
Temperature	
Pain(0-10/FLACC)	
Rash	
Bruises	

Anthropometry	
Weight	Kg (centile.....)
Height	Mt (centile.....)
BMI	(centile.....)
Head circumference	cm (centile.....)

Intake	
Food	
Fluids	
Output	
Urine	
Stool	
Other	

Allergies:
Medications:
Food:
Others:

Safeguarding concerns: Yes Not known
Checked by Name:.....
Sign:.....

CPP in place Yes No
Previous safeguarding concerns: Yes No

If yes, name of registrar/consultant informed:

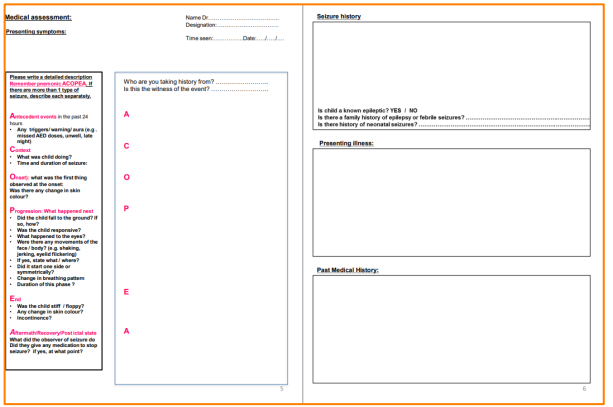
Dr.....Grade.....
Action required: Yes / No.
If yes what action:

Medication recently administered:
1.....time:.....
2.....time:.....
Regular medications:

Preferred preparation: Tablet Liquid
Route of administration: Oral NG Gastrostomy

Nursing notes:.....
.....
.....
.....
.....

2



Medical assessment:
Presenting symptoms:

Name Dr:.....
Designation:.....
Time seen:..... Date:...../...../.....

Please write a detailed description
Remember pneumonic ACOPEA : if there are more than 1 type of seizure, describe each separately.

Antecedent events in the past 24 hours
- Any triggers/ warning/ aura (e.g. missed AED doses, unwell, late night)

Context
- What was child doing?
- Time and duration of seizure:

Onset: what was the first thing observed at the onset:
Was there any change in skin colour?

Progression: What happened next
- Did the child fall to the ground? If so, how?
- Was the child responsive?
- What happened to the eyes?
- Was there any movements of the face / body? (e.g. shaking, jerking, eyelid flickering)
- If yes, state what / where?
- Did it start one side or symmetrically?
- Change in breathing pattern
- Duration of this phase ?

End
- Was the child stiff / floppy?
- Any change in skin colour?
- Incontinence?

Aftermath/Recovery/Post ictal state
What did the observer of seizure do
Did they give any medication to stop seizure? If yes, at what point?

Who are you taking history from? .....
Is this the witness of the event? .....

A
C
O
P
E
A

3

Seizure history

Is child a known epileptic? YES / NO
Is there a family history of epilepsy or febrile seizures? .....
Is there history of neonatal seizures? .....

Presenting Illness:

Past Medical History:

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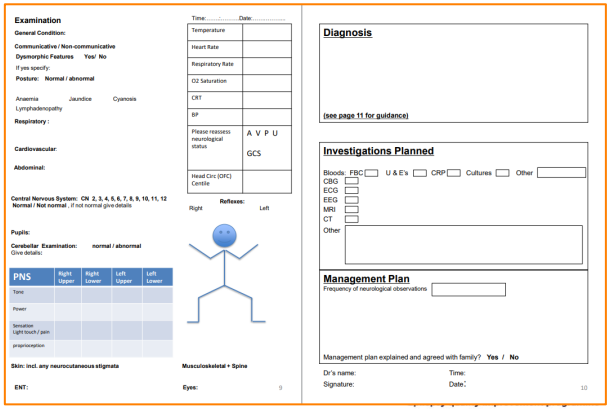

Examination
General Condition:
Communicative / Non-communicative
Dysmorphic Features Yes/ No
If yes specify:
Posture: Normal / abnormal

Anaemia Jaundice Cyanosis
Lymphadenopathy
Respiratory :
Cardiovascular:
Abdominal:

Central Nervous System: CN 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Normal / Not normal, if not normal give details
Pupils:
Cerebellar Examination: normal / abnormal
Give details:

PNS	Right Upper	Right Lower	Left Upper	Left Lower
Tone				
Power				
Sensation Light touch / pain proprioception				

Skin: incl. any neurocutaneous stigmata
ENT:

Time:..... Date:.....

Temperature	
Heart Rate	
Respiratory Rate	
O2 Saturation	
CRT	
BP	
Please reassess neurological status	A V P U GCS
Head Circ (OFC) Centile	

Reflexes:
Right Left

Musculoskeletal + Spine
Eyes:

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Diagnosis

(see page 11 for guidance)

Investigations Planned

Bloods: FBC CRP Cultures Other
CBG
ECG
EEG
MRI
CT
Other

Management Plan
Frequency of neurological observations

Management plan explained and agreed with family? **Yes / No**

Dr's name: Time:
Signature: Date:

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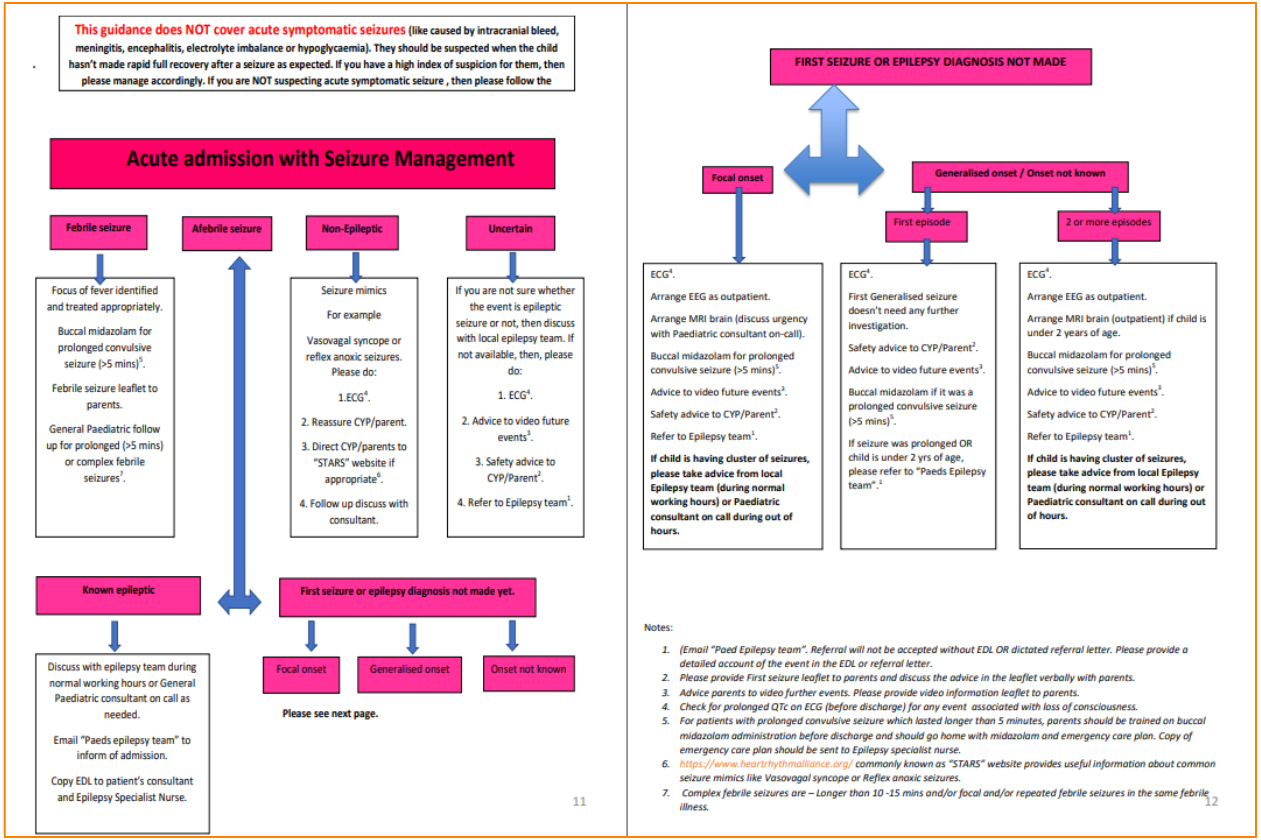

This guidance does NOT cover acute symptomatic seizures (like caused by intracranial bleed, meningitis, encephalitis, electrolyte imbalance or hypoglycaemia). They should be suspected when the child hasn't made rapid full recovery after a seizure as expected. If you have a high index of suspicion for them, then please manage accordingly. If you are NOT suspecting acute symptomatic seizure , then please follow the

Acute admission with Seizure Management

Febrile seizure

Focus of fever identified and treated appropriately.

Buccal midazolam for prolonged convulsive seizure (>5 mins)[5].

Febrile seizure leaflet to parents.

General Paediatric follow up for prolonged (>5 mins) or complex febrile seizures[7].

Afebrile seizure

Non-Epileptic

Seizure mimics

For example

Vasovagal syncope or reflex anoxic seizures. Please do:

1.ECG[4].

2. Reassure CYP/parent.

3. Direct CYP/parents to "STARS" website if appropriate[6].

4. Follow up discuss with consultant.

Uncertain

If you are not sure whether the event is epileptic seizure or not, then discuss with local epilepsy team. If not available, then, please do:

1. ECG[4].

2. Advice to video future events[3].

3. Safety advice to CYP/Parent[2].

4. Refer to Epilepsy team[1].

Known epileptic

Discuss with epilepsy team during normal working hours or General Paediatric consultant on call as needed.

Email "Paeds epilepsy team" to inform of admission.

Copy EDL to patient's consultant and Epilepsy Specialist Nurse.

First seizure or epilepsy diagnosis not made yet.

Focal onset

Generalised onset

Onset not known

Please see next page.

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FIRST SEIZURE OR EPILEPSY DIAGNOSIS NOT MADE

Focal onset

ECG[4].

Arrange EEG as outpatient.

Arrange MRI brain (discuss urgency with Paediatric consultant on-call).

Buccal midazolam for prolonged convulsive seizure (>5 mins)[5].

Advice to video future events[3].

Safety advice to CYP/Parent[2].

Refer to Epilepsy team[1].

If child is having cluster of seizures, please take advice from local Epilepsy team (during normal working hours) or Paediatric consultant on call during out of hours.

Generalised onset / Onset not known

First episode

ECG[4].

First Generalised seizure doesn't need any further investigation.

Safety advice to CYP/Parent[2].

Advice to video future events[3].

Buccal midazolam if it was a prolonged convulsive seizure (>5 mins)[5].

If seizure was prolonged OR child is under 2 yrs of age, please refer to "Paeds Epilepsy team".[1]

2 or more episodes

ECG[4].

Arrange EEG as outpatient.

Arrange MRI brain (outpatient) if child is under 2 years of age.

Buccal midazolam for prolonged convulsive seizure (>5 mins)[5].

Advice to video future events[3].

Safety advice to CYP/Parent[2].

Refer to Epilepsy team[1].

If child is having cluster of seizures, please take advice from local Epilepsy team (during normal working hours) or Paediatric consultant on call during out of hours.

Notes:

1. *(Email "Paed Epilepsy team". Referral will not be accepted without EDL OR dictated referral letter. Please provide a detailed account of the event in the EDL or referral letter.*
2. *Please provide First seizure leaflet to parents and discuss the advice in the leaflet verbally with parents.*
3. *Advice parents to video further events. Please provide video information leaflet to parents.*
4. *Check for prolonged QTc on ECG (before discharge) for any event associated with loss of consciousness.*
5. *For patients with prolonged convulsive seizure which lasted longer than 5 minutes, parents should be trained on buccal midazolam administration before discharge and should go home with midazolam and emergency care plan. Copy of emergency care plan should be sent to Epilepsy specialist nurse.*
6. *https://www.heartrhythmalliance.org/ commonly known as "STARS" website provides useful information about common seizure mimics like Vasovagal syncope or Reflex anoxic seizures.*
7. *Complex febrile seizures are – Longer than 10 -15 mins and/or focal and/or repeated febrile seizures in the same febrile illness.*

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Example of flow chart document for different types of seizures to guide doctors

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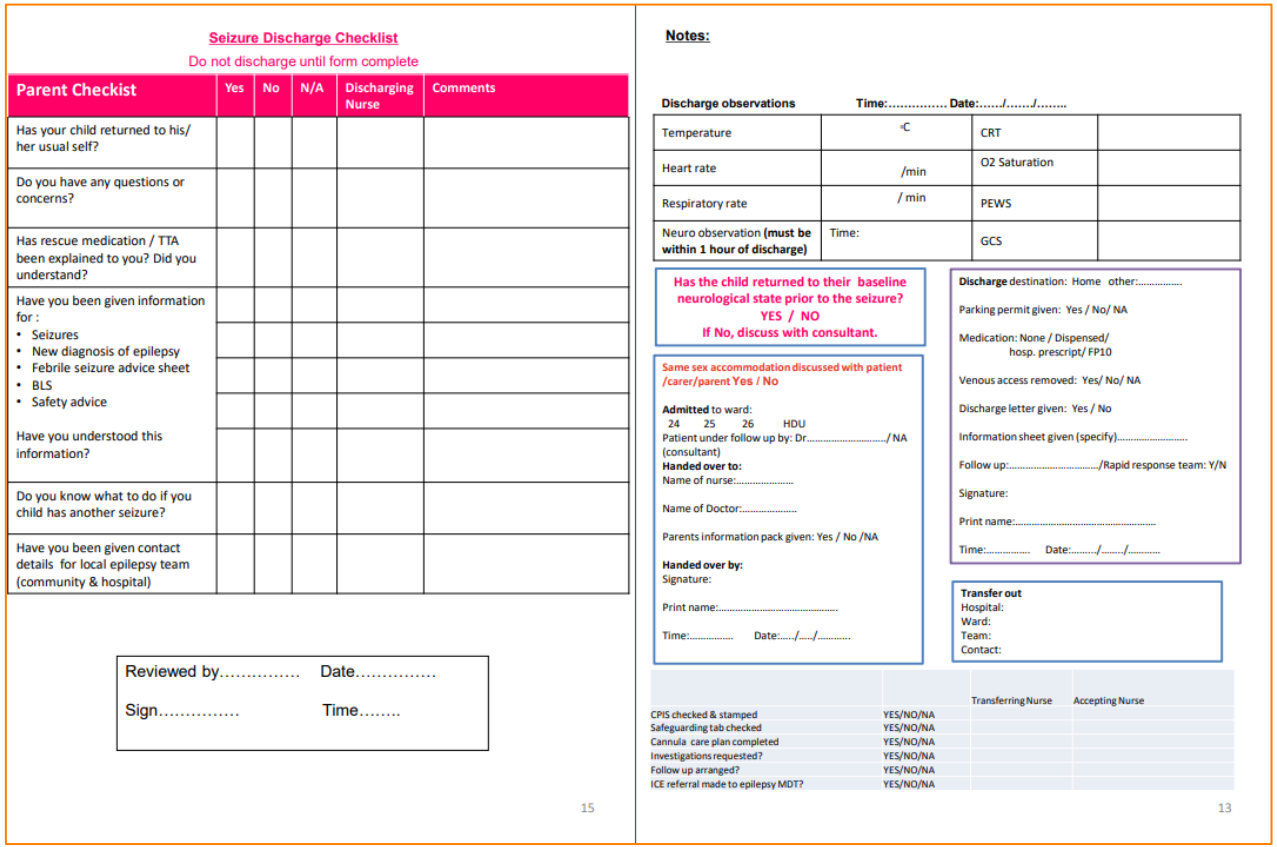

Seizure Discharge Checklist

Do not discharge until form complete

Parent Checkist	Yes	No	N/A	Discharging Nurse	Comments
Has your child returned to his/ her usual self?					
Do you have any questions or concerns?					
Has rescue medication / TTA been explained to you? Did you understand?					
Have you been given information for : • Seizures • New diagnosis of epilepsy • Febrile seizure advice sheet • BLS • Safety advice Have you understood this information?					
Do you know what to do if you child has another seizure?					
Have you been given contact details for local epilepsy team (community & hospital)					

Reviewed by..... Date.....

Sign..... Time.....

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Notes:

Discharge observations **Time:..... Date:...../...../.....**

Temperature	°C	CRT	
Heart rate	/min	O2 Saturation	
Respiratory rate	/ min	PEWS	
Neuro observation **(must be within 1 hour of discharge)**	Time:	GCS	

Has the child returned to their baseline neurological state prior to the seizure?
YES / NO
If No, discuss with consultant.

Same sex accommodation discussed with patient /carer/parent Yes / No

Admitted to ward:
24 25 26 HDU
Patient under follow up by: Dr...../ NA (consultant)
Handed over to:
Name of nurse:.....

Name of Doctor:.....

Parents information pack given: Yes / No /NA

Handed over by:
Signature:

Print name:.....

Time:..... Date:...../...../.....

Discharge destination: Home other:.....

Parking permit given: Yes / No/ NA

Medication: None / Dispensed/ hosp. prescript/ FP10

Venous access removed: Yes/ No/ NA

Discharge letter given: Yes / No

Information sheet given (specify).....

Follow up:...../Rapid response team: Y/N

Signature:

Print name:.....

Time:..... Date:...../...../.....

Transfer out
Hospital:
Ward:
Team:
Contact:

		Transferring Nurse	Accepting Nurse
CPIS checked & stamped	YES/NO/NA		
Safeguarding tab checked	YES/NO/NA		
Cannula care plan completed	YES/NO/NA		
Investigations requested?	YES/NO/NA		
Follow up arranged?	YES/NO/NA		
ICE referral made to epilepsy MDT?	YES/NO/NA		

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Example of discharge check list for safe discharge

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Audit results for cohort 3 – Performance indicators – Luton and Dunstable University Hospital

In 2021, Luton and Dunstable University Hospital increased the percentage of children and young people receiving an appropriate paediatric assessment (63%), achieving above the regional average and equalling national average results.

Performance indicators	2019	2020	2021	Regional network – EPEN	Overall England & Wales
4. Appropriate first paediatric assessment	-	54%	63%	**61%**	**63%**

Audit results for cohort 3 – Performance indicators – Luton and Dunstable University Hospital

In 2021, Luton and Dunstable University Hospital increased the percentage of children and young people with evidence of description of episodes (100%), description of age and timing of first episode (93%), description of neurological examination (91%), and description of developmental, learning or schooling progress, achieving above regional and national average results.

Performance indicators	2019	2020	2021	Regional network – EPEN	England & Wales
% of all children and young people with evidence of appropriate first paediatric clinical assessment	-	54%	63%	**61%**	**63%**
% children and young people with evidence of descriptions of episode	-	96%	100%	**99%**	**99%**
% children and young people with evidence of descriptions of age of child/timing of the first episode	-	81%	93%	**87%**	**83%**
% children and young people with evidence of descriptions of frequency	-	92%	91%	**90%**	**95%**
% children and young people with evidence of descriptions of general examination	-	96%	95%	**93%**	**92%**
% children and young people with evidence of descriptions of neurological examination	-	88%	91%	**90%**	**89%**
% children and young people with evidence of description of developmental, learning or schooling progress	-	77%	79%	**77%**	**85%**
% children and young people with epilepsy aged 3 years and over with evidence of consideration of emotional or behavioural problems	-	58%	60%	**61%**	**73%**

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Challenges

- Developing a whole pathway document was time-consuming, but through the support provided in the EQIP programme, the team used the advice to break the tasks into small parts, developing and testing them individually rather than waiting for the whole document to be developed before testing it, which was a game-changing suggestion.
- It has been a challenge to adapt to a new way of working under the pressures of the pandemic, but the team worked well together. Most of the patients and their families have been understanding of the sudden changes.

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Outcomes

- Achieved project aim to develop a standardised integrated pathway in the form of a document that has been tested with NHS colleagues.
- Changes are being incorporated as feedback is received on the new documentation and embedded in the processes within the acute paediatric assessment unit.
- National audit results revealed that in 2021, Luton and Dunstable University Hospital increased the percentage of children and young people receiving an appropriate paediatric assessment (**63**%), achieving above the regional average and equalling national average results.
    - Increased the percentage of children and young people with evidence of description of episodes (**100**%), description of age and timing of first episode (**93**%), description of neurological examination (**91**%), description of developmental, learning or schooling progress, achieving above regional and national average results.

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Lessons learnt

- To avoid feeling overwhelmed, divide tasks into smaller parts. Develop and test the individual small parts to improve efficiency and expedite the process.
- Taking small steps at a time and setting deadlines or milestones increases the chances of achieving improvements on a large-scale project.
- Organising team members to meet to work on the project was a challenge due to the various other commitments team members may have; however, the use of virtual meetings has helped with this issue.
- Making small changes at a time, continuously testing those changes, collecting feedback, and incorporating them into service improvement is crucial to making sustainable change.
- The whole team felt their EQIP experience had been a great journey because they were able to conceive an idea and then witness it take physical shape, which was a very satisfying experience that cannot be described in words.
- This project provided great team building and helped the team members get to know one another.
- The biggest challenge while participating in the programme has been the COVID-19 pandemic, which had a very disruptive effect on the project, the effects of which are still being felt.

Visual presentation of team project intervention

Video presentation Video presentations 2 Team poster

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EPILEPSY12

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