Minor Head Injury: Quality Improvement Project

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Abstract

The aim of this paper was to provide a Quality Improvement Tool for head injury patients.

Using NICE guidance on head injury (Jan 2014), 9 salient points in history and 8 in examination were chosen to be audited and given a tabulated form.

Key words: Quality Improvement, Head Injuries, NICE Guidelines

Background

There were 348,453 admissions to UK hospitals with acquired brain injury (ABI) in the year 2016-17 (Headway statistics, 2017). That is 531 admissions per 100,000 population. Most cases seek advice from first point of contacts, such as GP surgery (primary care), out of hours GP service, walk-in centres and minor injury unit of emergency department of nearest hospitals. Due to the ease of accessibility of primary care physicians, naturally more cases present to them first.

Aims and Objectives

The future management, follow up and final outcome of the injury depends on initial consultation and its clear and effective documentation. Hence, we felt the need to audit and improve the documentation of consultation by various primary care physicians based in two of the biggest GP practices in the Nottinghamshire area.

Standards

Quality of documentation after the introduction of the template was compared against the quality of previous documentation before the introduction of the template.

Methods

Using NICE guidance on head injury (Jan 2014), 9 salient points in history and 8 in examination were chosen to be audited and given a tabulated form.

Retrospectively, 15 medical notes were retrieved using ''System One'' (the electronic system for recording medical notes in UK). This data was found within a 3 months' time period (March - May 2017). A mixture of physicians was randomly selected which included ANPs (Advanced Nurse Practitioners), GP registrars and senior GPs (Consultants in family medicine). Clinicians' grades were kept indiscrete.

All notes were studied and audited against the chosen salient points in history and examination. Quality of notes was analysed collectively as well as individually.

Collective analysis revealed the overall trend of documentation pertaining to head injury and the individual analysis exhibited the trend of some clinicians as ''good documentation'' and ''poor documentation.''

Based on NICE and SIGN guidelines, a template was generated in ''System One'' and education delivered to all 25 clinicians in both practices. They were encouraged to document minor head injury notes using this template which would automatically appear on typing the word ''head injury'' and would prompt the clinician to use this template. The template included all the above 9 points in history and 8 in examination.

After 12 months, again a sample of 15 notes was collected randomly, in a retrospective manner and again the clinicians' grades were kept indiscrete. Data was analysed again and a remarkable improvement was demonstrated. Suggestions were made to further improve the documentation in other important areas of the clinical practice as well.

Basic knowledge

First we'll discuss the selected salient points in history and examination and their importance in documentation.

History

A large number of articles have suggested the importance of documenting a careful history of minor head injury on first consultation, including time, mechanism of injury, loss of consciousness (LOC), vomiting, bleeding from ear, nose or throat (E.N.T.) and excessive sleepiness, etc (Kerr J et al, 2005). Taking the lead from these studies, we drew the following points:

1. Time: Documenting time of head injury is extremely important to understand the clinical picture of the patient, lucid interval and for follow up management.
2. Mechanism: This depicts the severity of injury and the risk of brain injury. Any discrepancies in the history may also alert the clinician to think about non-accidental injury (safeguarding issues).
3. Loss of Consciousness (LOC): This is important to know if the patient remained alert throughout the incident or lost consciousness; even briefly. This would predict the severity of injury as well as define if there was any lucid interval.
4. Vomiting: In children 2 or more vomiting episodes since the time of injury were considered important, however, in adults even a single episode of vomiting should be considered important. This indicates early signs of raised intra-cranial pressure (NICE guidance, 2014).
5. Sleepiness: Excessive sleepiness after a head injury may indicate a severe injury and potential brain damage or intra-cranial collection.
6. Bleeding from Ear, Nose or Throat: This usually indicates fracture of base of skull and depicts a severe injury.
7. Headache: Some mild headache is not uncommon after even a minor head injury due to concussion. However, severe headache indicates a severe injury.
8. Safeguarding issues: A clinician should always be mindful of safeguarding issues while consulting any injuries, both in children and dependable adults as well as the elderly. If suspected NSI (non-accidental injury), they must follow the local protocol to deal with safeguarding concerns. We have a team called ''MASH (multi-agency safeguarding hub).
9. Anti-coagulants: It is very important to find out in the history if patient is taking anti-coagulants, such as Warfarin, DOACs, etc. Because if a patient is already on anti-coagulants, even with a subtle head injury there is always

a risk of intra-cranial bleeding, hence, they are referred straight to the emergency department for immediate CT scan. So the case will follow a different pathway.

Examination

Similarly, in examination, 7 salient points were chosen. These were also inferenced from NICE and SIGN guidelines.

1. GCS (Glasgow Coma Score): This should be readily evident if patient is alert and talking to the clinician and obeying clear commands. So, it does not require a formal evaluation of 15 points. Just overall impression of the patient or any deterioration in orientation or alertness should alert the consulting physician. However, it is expected to mention GCS as 15, if no concerns were found.
2. Mechanism: This is a very important point, as it determines the severity of injury plus it can indicate any signs of safeguarding issues as well.
3. Pupils: Pupil reactions to light and accommodation must be documented as unilaterally non-reactive, dilated or fixed pupil may indicate an intra-cranial collection.
4. C-Spine: It is often forgotten when clinician is too focussed on head injury. However, it must be kept in in mind that any head injury does have some impact on cervical spine. Hence, it is important to document if C-spine was normal or any findings.
5. Local: Examination of impact of injury must be documents, as open laceration, contusion, bruise etc. Skull must be examined for coup and counter-coup injuries and evidence of skull fracture.
6. ENT: As mentioned in history, any bleeding from ear, nose or throat should be asked, and then examination must be performed to confirm the findings.
7. Fundoscopy: We noticed, it was rarely done by physicians. However, it is still important to try and view the fundus if possible for any signs of raised intra-cranial pressure and be clearly documented in the notes.
8. Focal Neurology: It is important to mention if any focal neurological findings were determined by the consulting physician or not for completion purposes and for the reference for follow ups.

FIRST ANALYSIS (Mar – May 2017):

History:

NOTES: →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	%AGE
1.Time	√		√			√	√		√	√	√	√		√		60
2.Mechanism		√	√		√		√			√	√		√	√		53.3
3.LOC	√	√	√	√	√	√		√	√	√	√	√			√	80
4.Vomiting	√			√	√	√		√			√		√	√		53.3
5.Sleepiness			√			√		√			√			√	√	40
6.Bleeding E, N, T		√	√		√					√			√	√		40
7.Headache			√		√						√			√		26.6
8. Safeguarding			√								√			√		20
9. Anti-coagulants			√		√	√		√			√			√		40
OVERALL																45.9

Examination:

NOTES: →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	%AGE
1.GCS	√	√	√	√	√		√			√	√	√		√		66.6
2.PUPILS	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
3. C-SPINE			√		√						√			√		26.6
4. LOCAL			√		√						√			√		26.6
5.ENT	√	√	√	√	√	√	√		√		√	√		√	√	80
6.FUNDOSCOPY			√		√						√					20
7.OTHER INJURIES																0
8. FOCAL NEUROLOGY			√		√											13.3
OVERALL																47.6

Discussion

A clear below standards overall documentation was noticed in most of the consultations. Overall accuracy of notes hitting most points in the history section was only 45.9% while in examination section it was 47.6%. No notes mentioned if there were any other injuries or not. We assume that may be there were no other injuries hence the clinician did not like to mention any.

The quality of documentation of a few clinicians was way better than others. Those clinicians, individually, showed an overall good quality of documentation. However, they were few in number.

Physicians scored points in a wide variable range of 0 to 100%. The majority ranged between 40 - 80%.
We aimed to get the documentation to above 90% accuracy.

The Template

With the help of out IT team, using ''System One'' we created a template for consultation of minor head injury and incorporated it into the system. This triggers and pops up when a clinician types the words ''head injury'' or one of these two words. This way the clinician is automatically prompted to follow the template and record the documentation through this template.

If a clinician, at times gets distracted or forgets to evaluate any point in history or examination, the template would prompt him/her again.

The templated included all the points mentioned in the tables above as well as a few more points inferenced from NICE and SIGN guidelines and other published articles (Garcia-Rodroguez and Thomas, 2014).

SECOND ANALYSIS (Mar – May 2018):

Second analysis was conducted with an interval of 12 months to see the persistence of compliance. After 12 months, again a sample of 15 notes was collected randomly, in retrospective manner and again the clinicians' grades were kept indiscrete. The number of the notes audited again kept as random 15 for ease of comparison and calculations with the previous audit.

History:

NOTES: →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	%AGE
1.Time	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
2.Mechanism	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
3.LOC	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
4.Vomiting	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
5.Sleepiness	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
6.Bleeding E, N, T	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
7.Headache	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
8. Safeguarding	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
9. Anti-coagulants	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
OVERALL																97

Examination:

NOTES: →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	%AGE
1.GCS	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
2.PUPILS	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
3. C-SPINE	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
4. LOCAL	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
5.ENT	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	100
6.FUNDOSCOPY	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
7.OTHER INJURIES	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
8. FOCAL NEUROLOGY	√	√	√	√	√	√		√	√	√	√	√	√	√	√	93.3
OVERALL																95.8

Just at a glance, both tables look densely populated on second analysis. Almost all clinicians scoring 100% accuracy individually. However, one set of notes showed a trend of missing a few points. On investigation, it was revealed, the clinician was a locum who came to cover a shift and preferred documenting notes as free text instead of following the template. However, they still did a good job by covering most points, albeit not 100%.

This showed compliance of all regular clinicians in both practices and overall accuracy of 97% in history section and 95.8% in examination section.

Conclusion

So, the aims and objectives, set for this quality improvement activity (as >90%) of the audit were achieved successfully and further suggestions were made.

Using templates for accurate documentation is a good way and improves the quality of documentation.

Suggestions

1. Continue to show compliance with the template for minor head injury for better quality of documentation.
2. Suggestions to create more simple templates for other common consultations as well, for example, chronic disease monitoring, medication reviews, chest infection etc.
3. Continually keep auditing the quality of notes with the aim to improve practice regularly.
4. The suggestions were extended to the local CCG to be forwarded to other practices as well in the region.

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