AIM
The overall mortality rate of subarachnoid haemorrhage (SAH) is up to 50% at six months, with a third of survivors left with neurological deficits affecting their activities of daily living. Therefore it is important to correctly identify a SAH when presented. Following two Serious Untoward Incidents (SUIs) in the Emergency Department (ED) of Hillingdon Hospital, a district general hospital, where SAHs were missed as a result of failure to perform CT scans in patients presenting with headache, a quality improvement project was undertaken to increase recognition. The aim was to increase the number of appropriately requested CT scans in patients presenting with symptoms of SAH.

METHOD
Initially, liaising with Neurology and Radiology colleagues an agreed list of “red flag” symptoms for SAH in a patient presenting with headache was created. It was agreed that the identification of any of these “red flags” in patients with headaches warrant a CT scan. In accordance with this, it was decided that the outcome measure would be the percentage of appropriately requested CT scans a month.

Through meetings with key stakeholders and facilitating focus groups, several ideas for change were generated. The four ideas chosen to be implemented through Plan-Do-Study-Act (PDSA) cycles were:

- **Education** of ED doctors, Acute medicine doctors and ED nurses (PDSA cycle 1)
- **Warning Cards** attached to the notes of headache patients by the registering receptionists, alerting staff to a potential sinister cause of the headache (PDSA cycle 2)
- **Red Flags Sticker** attached to the notes of headache patients by the triage nurses, to help with the doctor’s assessment and prompt them to consider a CT scan (PDSA cycle 3)
- **Fact of the Week Posters** reminding staff to think about SAHs (PDSA cycle 4)

A timeline of the interventions implemented during the project is shown in figure 1 below. Various communication techniques in the form of emails, posters (image 1), notes in the reception communication book, speaking at nursing handovers and to staff on the shop floor, were used to publicise the project and remind staff of the new processes.

**RESULTS**
Two hundred and forty five patients’ notes were studied over 6 months. The incidence of SAH was 1.2% (n <3), consistent with the reported literature. Baseline data taken over a month before the project began showed 64% of patients presenting to the ED with a headache and at least one “red flag” were appropriately scanned. The same data collected on a monthly basis for the duration of the project showed an increase of appropriate CT scans to an average of 84% (Figure 2). To date there have been no further SUIs.

**CONCLUSIONS**
We are now providing an enhanced diagnostic service to patients presenting to the ED with a potentially life threatening condition through an increased number of appropriately requested CT scans. Furthermore, informal feedback received reflects improved staff confidence in recognising and managing patients with SAHs.

**LESSONS LEARNED**
- PDSA cycles are a useful way to make effective changes in the ED, as it allows for any problems encountered to be rectified quickly
- A variety of communication forms are needed to publicise new processes in a department and engage staff
- Involving different staff groups i.e. doctors, nurses, receptionists and administration staff helps to create a concerted team approach to the problem

**REFERENCES**

**CONTACT DETAILS**
Name: Dr. Rajan Atwal (Emergency Medicine ST5)
Email: Rajan.atwal@nhs.net
Address: The Hillingdon Hospital, Pield Heath Road, Uxbridge UB8 3NN