

South Tees Optical Referral Project (STORP)

A project summary

Accelerate, Coordinate, Evaluate (ACE) Programme

An early diagnosis of cancer initiative supported by:
NHS England, Cancer Research UK and Macmillan Cancer Support

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Project team and supporting staff: Phil Kane, Angela Wood, Carol Taylor, Kay Dover, Anil Varma, Gavin Young

About the ACE Programme

The Accelerate, Coordinate, Evaluate (ACE) Programme is an early diagnosis of cancer initiative focused on testing innovations that either identify individuals at high risk of cancer earlier or streamline diagnostic pathways. It was set-up to accelerate the pace of change in this area by adding to the knowledge base and is delivered with support from: NHS England, Cancer Research UK and Macmillan Cancer Support; with support on evaluation provided by the Department of Health's Policy Research Units (PRUs).

The first phase of the programme consisted of around 60 projects split into various topic-based clusters to facilitate evidence generation and learning. The second phase (pilots live from January 2017) comprises five projects exploring Multidisciplinary Diagnostic Centre (MDC) -based pathways. The learning from ACE is intended to provide ideas and evidence to those seeking to improve local cancer services. The evaluations and findings are produced independently, and are therefore, not necessarily endorsed by the three supporting organisations.

Executive Summary

This document is a summary of a project that implemented an optometrist direct referral to neuroscience pathway and is part of the cluster looking at the role non-GP primary care health professionals can play in diagnosing cancer earlier. The summary provides: results, challenges and perceived benefits of the project; and includes a depiction of the patient pathway model. As such it should prove helpful to colleagues interested in designing and implementing a similar pathway.

Context

Optometrists have the skills, knowledge and equipment to identify visual field defects which may be suggestive of brain or central nervous system (CNS) cancers such as pituitary tumours, or may indicate a person has had, or is at risk of, a transient ischemic attack (TIA, sometimes known as “mini stroke”).

South Tees Optical Referral Project (STORP)

South Tees NHS Foundation Trust designed and implemented an optometrist direct referral to neuroscience pathway, thought to be the first of its kind in the UK, to support the earlier detection of brain or CNS cancers as part of a Macmillan-funded Integration of Cancer Care (MacICC) programme. The project is called the South Tees Optical Referral Project (STORP).

The initial project included 11 optician practices in the Borough of Middlesbrough, which has a population of 138,900 and an area of 53.9 km². This was later expanded geographically to include a total catchment population of 415,282.

The project ran from July 2015 to August 2016 after which plans were put in place to extend the approach across neighbouring areas in Teesside.

The main aim of the project was to determine whether direct referral from optometrists to neurosciences significantly reduces the time taken for patients from referral to diagnosis.

Findings

STORP received 17 referrals, a high number of which were viewed as appropriate and were admitted on to the pathway. Of these patients, six were assessed and treated as stroke/TIA. Five patients were assessed and referred on for an MRI scan for further checks.

A small number of patients (<5) had symptoms that qualified them for the pathway, but were found to have pre-existing conditions and so were discharged.

One patient was diagnosed and treated for cancer which demonstrated proof of model. A small number of patients (<5) were also diagnosed with other conditions.

The patients not admitted onto STORP did not meet the age criteria, although it proved useful as an efficient route into secondary care for them. As a result, they were fast tracked through appropriate channels internally rather than being referred back to primary care.

Feedback from a survey completed by optometrists who attended an initial briefing for STORP felt that they had adequate guidance to make appropriate referrals and that they were well-supported by the project team.

The project experienced several challenges during implementation which may have negatively impacted referral rates. These are documented later in this project summary so that others may learn from them.

Although the data gathered are too small to determine overall effectiveness of the pathway, the 'proof of model' evidence coupled with the belief in the pathway's value by the participating health professionals, suggest that this approach should be trialled further. Whilst dependent on a funding decision, the project team hope that STORP will be expanded geographically. At the time of publication of this project summary, STORP is actively admitting patients.

[Video interviews](#)

Links to short video interviews conducted with a number of project members can be found on page 8 of this project summary. The interviews provide valuable insight into STORP from members of the project team.

Contents

CONTEXT	1
SOUTH TEES OPTICAL REFERRAL PROJECT.....	1
AIMS AND OBJECTIVES	1
METHOD AND APPROACH.....	2
THE NEW NEUROSCIENCE PATHWAY.....	2
PATHWAY DEVELOPMENT.....	3
RESULTS	
CHALLENGES.....	6
BENEFITS.....	7
VIDEO INTERVIEWS.....	8
LIFESPAN OF STORP.....	8
CONCLUSION.....	8
APPENDIX A: STORP SYMPTOM CHECKER AND REFERRAL FORM.....	9

Context

The neural pathways involved in the processing of visual information are "hardwired" in the brain. Damage to these pathways produces characteristic changes which can be detected on routine testing of the eyes by optometrists. Brain tumours can give rise to specific changes in the visual fields and swelling of the optic nerve (papilledema). If these changes are detected by an optometrist the traditional pathway of referral is for the optometrist to refer the patient back to their GP and request that the GP arranges an outpatient referral to the appropriate specialist: this leads to delay in specialist assessment.

Optometrists have the skills, knowledge and equipment to identify visual field defects which may be suggestive of brain or central nervous system (CNS) cancers such as pituitary tumours, or may indicate a person has had or is at risk of a transient ischemic attack (TIA, sometimes known as "mini stroke").

South Tees Optical Referral Project (STORP)

South Tees NHS Foundation Trust designed and implemented an optometrist direct referral to neuroscience pathway, thought to be the first of its kind in the Europe, to support the earlier detection of brain or CNS cancers as part of a Macmillan-funded Integration of Cancer Care (MaClCC) programme. The project is called the South Tees Optical Referral Project (STORP).

The project team consisted of Professor Phil Kane, Consultant Neurosurgeon; Dr Angela Wood, MaClCC Programme Sponsor and Carol Taylor, MaClCC Programme Manager. The team were supported by the following staff:

- Mr A. Varma: Consultant Neurosurgeon
- Dr G. Young: Consultant Neurologist
- Mrs K. Dover: MaClCC Service Improvement Lead.

The initial project included 11 optician practices in the Borough of Middlesbrough, which has a population 138,900 and an area of 53.9 km². This was then extended in October 2015 to include a further 16 optician practices in the Borough of Redcar and Cleveland and increasing the catchment population to 274,100 and geographic coverage to 304km². In April 2016 the project was extended for the final time to include Hambleton, Richmondshire and Whitby where the catchment population increased to 415,282.

The project ran from July 2015 to August 2016 after which plans were put in place to extend the approach across neighbouring areas in Teesside.

Aims and objectives

The main aim of the project was to:

- Determine whether direct referral from optometrists to neurosciences significantly reduces the time taken for patients from referral to diagnosis.

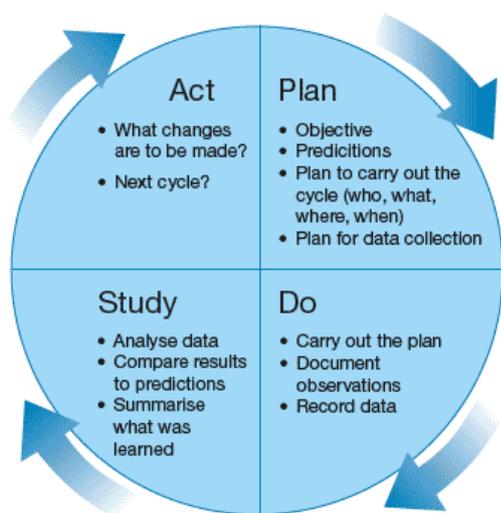
The STORP project sought to determine whether the optometrist direct referral of patients:

- Improved the referral pathway for those with suspected cancer to the appropriate clinician
- Provided faster diagnosis and treatment of tumours minimising neurological deficit and improving general health and well-being
- Provided for earlier diagnosis by reducing the time from referral to diagnosis and diagnosis to treatment
- Improved access to treatment and supported it in a more integrated way
- Improved identification and subsequent referral pathways of patients who had or were at risk of a transient ischemic attack (TIA)
- Improved patient experience.

Method and approach

The approach to Service Improvement in South Tees NHS Foundation Trust is the Plan, Do, Study, Act (PDSA) model (Figure 1.1). This model was adopted in the design and implementation of STORP.

Figure 1.1: PDSA model



The model for improvement provides a framework for developing, testing and implementing changes leading to improvement. Using PDSA cycles enables you to test out changes on a small scale, building on the learning from these test cycles in a structured way before wholesale implementation. This gives stakeholders the opportunity to see if the proposed change will succeed and is a powerful tool for learning from ideas that do and don't work. This way, the process of change is safer and less disruptive for patients and staff (NHS Institute, 2016).

The initial focus for the STORP project was to engage with optometrist partners to gain their support and to agree the scope of the project. This involved establishing how often they encountered visual field defects indicative of pituitary tumours and if there were any other conditions that should be considered; for example, what information the referrals would contain and how the pathway would be implemented. The MacICC Service Improvement Lead worked with clinical teams and the optometrists to map both current and future pathways.

The new neuroscience pathway

The innovative pathway was designed to remove unnecessary steps and to speed up the patient referral process. Optometrists refer patients (adults under the age of 65) with field vision defects directly to neuroscience. Their referrals go to a mini multidisciplinary team

(MDT) consisting of two consultant neurosurgeons and one consultant neurologist who ascertain the most appropriate referral route for the patient.

If GPs suspect a field vision defect indicative of pituitary tumour or TIA, a standard referral would see a patient sent to the optometrist to get it confirmed, and then the optometrist would have to send the patient back to the GP to be referred on to an ophthalmology outpatient clinic before reaching the neuroscience department of the local NHS trust. The need for a GP referral appointment meant some delay for the patient and additional workload for the GP.

In addition, GPs did not always send the patient to the optometrist to get a suspected field vision defect confirmed, but sometimes treated symptoms or asked the patient to return if symptoms continued causing further delay.

If optometrists notice the same symptoms in a person as part of a standard eye check, the routine pathway in South Tees sees the person referred back to the GP who will then refer to the ophthalmology outpatient clinic.

The inclusion of patients at risk of TIA making the pathway not exclusive to cancer should also benefit more patients and so strengthen the case for further investment.

Pathway development

The different organisations and roles involved in the development of the pathway included:

- From **South Tees NHS Foundation Trust**: lead cancer clinician and chief of neuroscience (a consultant neurosurgeon), chief of specialty medicines (a consultant haematologist and MacICC programme sponsor), a consultant neurosurgeon and one consultant neurologist
- From **MacICC**: Programme Manager and Service Improvement Lead
- From **Local Optical Committee (LOC)**: Chair of LOC
- **Optician practices in Middlesbrough, Redcar and Cleveland**
- **South Tees Clinical Commissioning Group**

Activities undertaken to mobilise individuals to develop the pathway:

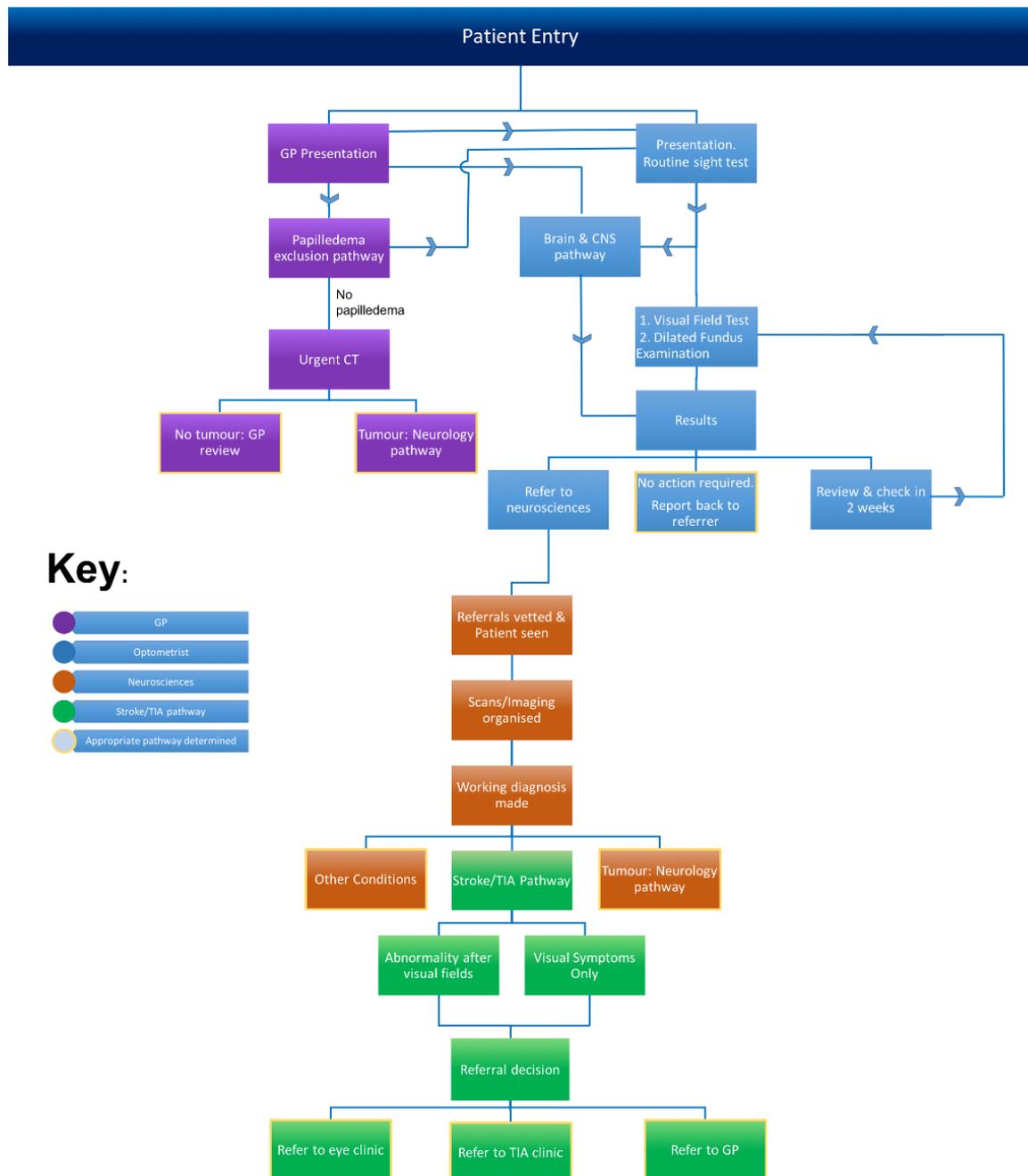
- Briefing sessions for individuals and organisations
- An educational event which brought GPs and optometrists together for the first time in South Tees and was delivered with support from the neuroscience department
- Contact and meetings with Macmillan GPs in North and South Tees to find out if they thought the new pathway would be beneficial to GPs
- Conversations with local government including Middlesbrough Borough Council and Teesside Public Health about the project.

The MacICC Service Improvement Lead worked with the two consultant neurosurgeons, Macmillan GPs and the LOC to map existing pathways for pituitary tumours and develop an optometrist direct referral pathway for visual field defects. For a full list of referral criteria please refer to appendix 1 at the end of this project summary.

To sustain engagement and retain momentum with optometrists, the project made practice visits. The team felt it important to reiterate the aims of STORP and that support was available.

The optometrists were surveyed following the 1:1 visits to ensure understanding of STORPs aims and objectives, where to find additional clarity or guidance around making a referral.

Figure 1.2: STORP pathway



Results

Of the 17 referrals, a high number were viewed as appropriate and were admitted on to the pathway. Of these patients, six were assessed and treated as stroke/TIA. Five patients were assessed and referred on for an MRI or CT scan for further checks.

A small number of patients (<5) had symptoms that would have qualified them for the pathway, but were found to have pre-existing conditions and so were discharged.

Diagnosis and treatment of cancer and other conditions were seen in a low number of patients (<5), which demonstrates proof of model. The following section outlines the diagnostic journey for the one patient diagnosed with cancer.

"Numbers [of referrals] are low but the pathway can significantly affect the outcome for someone who's been diagnosed with a potentially devastating condition"

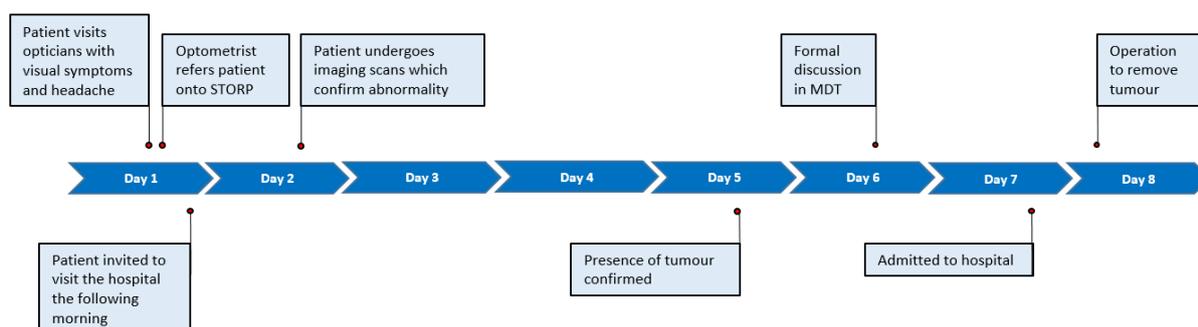
Kay Dover, MacICC Service Improvement Lead

A low number of patients (<5) were not admitted to the pathway as they didn't fulfil the age criteria; patients admitted onto the STORP pathway must be aged between 18 and 65. The pathway proved useful as an efficient route into secondary care for them however, as they were fast tracked through appropriate channels internally rather than being referred back to primary care.

Proof of model – a patient case study

Implementation of the new referral pathway took place from 6th July 2015 until 31st August 2016. Whilst the referral numbers are low the STORP project has demonstrated a benefit for patients through successful diagnosis and treatment of one patient. Figure 1.3 shows the diagnostic journey of this patient following a routine eye check at an optometrist.

Figure 1.3: Example timeline for a patient diagnosed through STORP



As the example timeline shows, diagnosis was reached in four days, with the operation to remove the tumour conducted eight days after the routine eye check. The alternative urgent pathway would have the patient seen by a GP ahead of being referred to the ophthalmology outpatient clinic and neuroscience.

While it is not possible to provide an estimate on the length of time it would have taken for the patient to reach treatment (surgery) on the standard pathway, the STORP pathway is certainly more efficient than any of the current national cancer waiting time targets (31 day and 62 day standards).

"This example shows that the optometrists can pick up field defects, which are a reflection of underlying structural problems"

Professor Phil Kane, Consultant Neurosurgeon

This example demonstrates that the pathway model can work to reduce the length of time to diagnosis and treatment. It also confirms the ability of optometrists to make appropriate referrals.

Optometrist survey

A survey of optometrists (with a 48% response rate) was conducted after 1:1 introductory meetings. 100% of respondents said they found the referral process understandable and 83% felt they had received adequate guidance to make appropriate referrals. The other 17% had not been able to attend the introductory day. 92% felt well supported by the STORP project team. The results from the survey were encouraging although a similar survey conducted towards the end of the project would have provided greater understanding of their actual experience and helped identify any further potential needs.

Patient experience survey

10 patients were contacted for the patient experience survey post-intervention. Response from these 10 patients was very low [1] so the findings from the survey are inconclusive. Possible reasons for the low return rate are included on page 7 in the challenges section.

Challenges

Communication

There was concern among project leads that the low referral numbers were partly a result of participating optometrists simply forgetting about the project. Due to time constraints of STORP project management, regular communication with participating optometrists, in the form of drop-ins and reminders, were not possible. That said, a survey of optometrists, after initial 1:1 visits to introduce the project, suggest the project team were effective in ensuring understanding of the project.

Data collection

Data collection and logging procedures were not clear to all members of the project team and participating health professionals. This led, at the beginning of the project, to data on four referrals not being recorded and so the outcomes for these patients are not known. This also meant they could not be contacted for the survey.

Dedicated project time for clinicians and project team

Whilst there was enthusiasm and appetite amongst clinicians to design and implement the STORP project, there was not enough allocated time for this. It is suggested that if clinical time had been financed and protected, more could have been achieved particularly in relation to raising awareness with partners and the public about this new initiative.

Role changes

Organisational changes and role changes meant STORP project members did not meet as regularly thus resulting in a temporary loss of momentum.

Accurate professional contact details

Due to engaging with a number of health professionals whom the project team had no previous working experience, gathering correct contact details proved time-consuming.

Completion of patient experience survey

All patients accepted along the pathway were sent a patient experience form with a return envelope on two separate occasions a short time after being discharged. Though it is not known why patients did not complete the form, the project team believe that handing out the survey in person during final contact with patients may have improved survey responses.

Benefits

Building better connections across primary and secondary care

The project saw cross-boundary working and partnerships being built across a broad range of NHS health professionals and local optometrists. One of the initial set-up meetings saw a large group of local optometrists, GPs, CCG members and secondary and tertiary care clinicians brought together. Discussions on future collaborations between the Trust and the LOC will continue.

"The most heartening thing for me was that the project started breaking down some of the professional barriers that exist and generated a much greater enthusiasm to look at how we can work more collaboratively with optometrists"

Professor Phil Kane, Consultant Neurosurgeon

GPs and optometrists are better informed about the outcomes of patients they refer. The previous pathway would often see patients "lost in the system" following the initial referral. Much of this improvement is attributed to do the improved communication between primary and secondary care.

Utilising existing specialties

STORP implements a new pathway for which optometrists are already qualified and willing to refer patients to. GPs were supportive of the pathway as they viewed this as a way of streamlining it for patients who need more of a specialist review. A further benefit is the potential for freeing up more time for routine clinic appointments.

"There was an acknowledgement among GP colleagues that optometrists are potentially an untapped resource for eye assessment, doing things that just aren't feasible in your average general practice, but may not necessarily mean you have to go to the hospital to have them done"

Professor Phil Kane, Consultant Neurosurgeon

Video interviews

Short video interviews were conducted with project members to hear their thoughts on various aspects of the project:

- Interview with **Carol Taylor**, MacICC Programme Manager and **Kay Dover**, MacICC Service Improvement Lead on the purpose and value of STORP: <http://bit.ly/2iHVJ6G>
- Interview with **Julie Breen**, Tees LOC Chair and **Kay Dover**, MacICC Service Improvement Lead on stakeholder support, training and the role the LOC can play: <http://bit.ly/2iHWFbc>
- Interview with **Professor Philip Kane**, Consultant Neurosurgeon on proof of concept, why it is unique and the value in bringing health professionals together: <http://bit.ly/2ibvhBG>
- Interview with **Professor Philip Kane**, Consultant Neurosurgeon on expansion of STORP and advice for a colleague setting up a similar project: <http://bit.ly/2iLnHKz>

Lifespan of STORP

MacICC funding for STORP formally ends in March 2017. From this point, the pathway will remain live, but receive limited management time.

If funding becomes available for project management, there is scope to increase the project's geographic footprint with the LOCs into neighbouring boroughs across North Tees.

Conclusion

This project has been successful in creating new relationships and reducing barriers between primary and secondary care and optometrists. It has enabled professionals from speciality disciplines to come together to develop a new direct referral pathway, which can help reduce the time to diagnosis of brain and CNS cancers and also help identify and refer patients considered to be at high risk of stroke or TIA. Though the project did not generate a high number of referrals, the 'proof of model' evidence for this unique pathway, together with the enthusiasm of the participating health professionals, offer a compelling case for trialling this pathway in other areas to increase the evidence base.

Appendix A



SOUTH TEES OPTICAL REFERRAL PROJECT SYMPTOM CHECKER & REFERRAL FORM

Please complete where appropriate:

Patient name:		Patient address inc. postcode:	
Patient D.O.B:	Age (18-65):		
Patient telephone number:		Patient email address:	
Name of referring optician:		Name of referring practice:	
Date of visual field test:		Date of referral:	
How long has the patient encountered these symptoms?			
Copy of the field vision print out attached?			Y / N
The patient is aware of your referral to neurosciences and has given consent for you to do so.			do Y / N

Does the visual field test show the patient has any of the following signs and symptoms – please tick **all** that apply.

<input type="checkbox"/>	Bi-temporal Hemianopia (specific for pituitary tumours)
<input type="checkbox"/>	Binasal Hemianopia (indicative of other supra sellar tumours)
<input type="checkbox"/>	Papilloedema / Optic atrophy (Optic nerve pathologies/raised Intracranial Pressure)
<input type="checkbox"/>	Homonymous hemianopia or quadrantanopia (Field defects in lesions)
<input type="checkbox"/>	Transient monocular blindness (Amaurosis fugax)
<input type="checkbox"/>	Transient visual field symptoms (such as hemianopia or quadrantanopia)
<input type="checkbox"/>	Asymptomatic retinal emboli (not appropriate for TIA clinic)
<input type="checkbox"/>	Persisting monocular visual loss (complete or partial)

PLEASE FAX THIS INFORMATION TO THE SOUTH TEES HOSPITALS NHS FOUNDATION TRUST DEPARTMENT OF NEUROSCIENCES ON THE FOLLOWING NUMBER: *Fax: 01642 282770 marked clearly* *FAO: KATE HELSTRIP: SECRETARY TO PROF. KANE AND MR VARMA*