Cigarette smoke contains over 3000 different chemicals. Some of these are carcinogenic and others, including nicotine, have been proven to contribute to poor post operative recovery and wound healing. In a prospective study, 100 patients who were seen at a preadmission clinic for elective breast and abdominal surgery were asked to fill out a questionnaire on their smoking habits. They then had their urine tested for traces of nicotine using a new Smokescreen test. The level of these products directly relates to the number of cigarettes being smoked.

Data collected showed 15 of the 100 patients admitted to still smoking. Of the 85 who claimed not to be smoking 30 (35%) were recorded as having positive traces of nicotine. These ranged from results indicating passive smoking to those indicating up to 20 cigarettes per day.

Plastic surgery literature shows a statistically significant increase in complication rates in smokers compared to non-smokers. By using a simple 5 minute test in the preadmission clinic, we were able to identify patients who were still smoking. We feel a positive test justifies postponing surgery thereby reducing the risk of post operative complications and the morbidity and costs associated with this.

Methods
A prospective audit of 100 patients’ smoking habits was undertaken between August and November 2006 in the plastic surgery department of Selly Oak hospital. All 100 patients were to be admitted for elective plastic surgery procedures provided on the National Health Service (NHS). The procedures included in this study were: breast reduction, breast augmentation (due to asymmetry or hypoplasia), abdominoplasty, delayed breast reconstruction and gynaecomastia surgery. All patients for cancer or trauma surgery and any regional/local anaesthetic procedures were excluded.

Patients were informed in their pre-screening appointment letter that they were going to be asked whether they were a smoker or not; if and when they had given up smoking; were they on any nicotine replacement products such as gum or patches; and whether they had managed to stop smoking.

Although we do routinely ask patients not to smoke before their operations, we have not previously included in this form were whether the patient was a smoker or not; if and when they had given up smoking; were they on any nicotine replacement products such as gum or patches; and whether they had managed to stop smoking.

The National Health Service (NHS) continues to strive for a better service and patient care despite rising financial constraints and fluctuating waiting time targets. Any predisposing conditions to post operative problems such as smoking should be identified in elective surgery if possible. Complications result in increased patient morbidity, delayed discharge and ultimately cost the health service more.

As such, we feel that the simple 5 minute Smokescreen test will improve the pick up of traces of nicotine breakdown products up to 2-3 days after smoking cessation. Our department decided to audit prospectively the smoking habits in 100 patients coming for elective surgery.

Discussion
Most surgical departments have a policy relating to smoking and elective surgery. Whether the patient has stopped smoking has been a matter of trust between patient and clinician. The Smokescreen test allows an objective assessment of smoking habits up to 3 days prior to testing. A positive test result gives a value of nicotine breakdown product in the urine which equates to a value of the number of cigarettes smoked per day.

A positive Smokescreen test of 35% in our “non-smoker” patient group presenting for elective plastic surgery procedures is higher than the 26% self-denial rate recorded by Payne et. al. This series is not directly comparable as they looked at a wide spectrum of plastic surgery patients undergoing various procedures performed under general regional or local anaesthesia. Of note, however is that although small in number, the largest proportion of under reporting across all their patients groups were found to be women with plastic and reconstructive procedures performed.

Table 2. List of 103 planned procedures (number and percentage of total procedures).

<table>
<thead>
<tr>
<th>Smokescreen reading</th>
<th>Equivalent number of cigarettes/day</th>
<th>Number of smokers</th>
<th>Number of Non smokers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>10</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>High</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Medium</td>
<td>10</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Light</td>
<td>5</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Passive</td>
<td>1.3</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>13</td>
<td>30</td>
</tr>
</tbody>
</table>

There is also no literature evidence to support a specific “threshold” level of the number cigarettes smoked per day, that results in an increase of complications. This makes canceling an operation in for example a positive test result of a passive smoker potentially contentious.

In the past, patients who continued to smoke despite being fully informed of the risks of complications, may have been lucky and had an uneventful post operative course. We believe that using the smokescreen test limits this “complication lottery” during non life or limb threatening operations, protecting specifically those most at risk, the smoking “non-smoker” patient.

The financial costs of elective surgery in a smoking group of patients compared to that of non-smoker group is increased. This includes on average a longer in patient stay (bed days in hospital) to the outpatient setting with an increase in dressings and clinic appointments and also further corrective/ revision surgery. Although smoking is only one of a number of possible contributing factors to post operative complications, we feel that the simple 5 minute Smokescreen test will improve patient care, decrease potential complications and decrease hospital costs in elective plastic surgery patients.

Following this preliminary study, we aim to improve the under reporting of smoking habits in patients by better communication about the risks of smoking in the initial consultation prior to placing the patient on the waiting list. Each patient will also receive an information leaflet which documents our policy on non smoking in elective surgery, some medical evidence to support this and a description of the smokescreen test and how it works.

Conclusion
We believe there is good evidence to support the consideration of excluding smokers for elective plastic surgery procedures in the National Health Service on medical as well as financial grounds. We are now able to identify all smokers using a simple urine test in preadmission clinic.

References