Quality Improvement Report

Reducing bruising after venepuncture

P G R Godwin, A C Cuthbert, A Choyce

Abstract
Bruising after venepuncture is undesirable. To verify an apparent increase in bruising after introducing a new venepuncture system in a small district general hospital and to improve the venepuncture service two prospective audits of the incidence and severity of bruising after venepuncture were performed in two groups of 100 consecutive inpatients undergoing venepuncture by phlebotomists. In the first audit bruising was detected in 45 patients, of whom 34(76%) had bruises > 100 mm² in area. After modification of the technique, whereby the phlebotomists ensured that haemostasis had been attained before leaving the patient, bruising was significantly reduced, occurring in 25 patients only 9 of whom (36%) had bruises > 100 mm² in area (both p < 0.01) in the second audit. Monitoring of standards and simple modification of technique resulted in significant reduction in incidence and severity of bruising, improving the quality of the venepuncture service.

(Quality in Health Care 1992;1:245-246)

Introduction
Venepuncture is the “shop window” of our pathology service, and as such it is important that patient distress and inconvenience are minimised. Painful venepuncture and unsightly bruising can leave a lasting impression of a substandard service.

After the introduction of a pre-evacuated tube collection system (“Vacutainer,” Becton and Dickinson, Oxford) to our laboratory in January 1990 members of staff were concerned about an apparent increase in frequency and size of bruising in patients after venepuncture. It was impossible to test the validity of this assumption by comparison with the “needle and syringe” method previously used, as that method had not been evaluated. In addition, we were unaware of any pre-existing data that establishes standards against which our sampling could be measured.

We therefore examined the incidence and size of bruise after venepuncture by trained phlebotomists and repeated the study with the same staff with a comparable group of patients six months after the technique was modified to ensure haemostasis after venepuncture.

Table 1 Area of bruising corresponding to perpendicular dimensions

<table>
<thead>
<tr>
<th>Perpendicular dimensions (mm)</th>
<th>Area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5 X 5 - 5 X 5</td>
<td>1 - 25</td>
</tr>
<tr>
<td>&gt; 5 X 5 - 10 x 10</td>
<td>26 - 100</td>
</tr>
<tr>
<td>&gt; 10 x 10 - 20 x 20</td>
<td>101 - 400</td>
</tr>
<tr>
<td>&gt; 20 x 20 - 30 x 30</td>
<td>401 - 900</td>
</tr>
<tr>
<td>&gt; 30 x 30</td>
<td>&gt; 901</td>
</tr>
</tbody>
</table>

Patients and methods
We studied 100 consecutive medical and surgical inpatients who had blood samples collected by trained phlebotomists. Children (aged below 15 years), patients receiving anticoagulants, and patients with extensive pre-existing bruises were excluded from the study.

All blood samples were collected from the antecubital fossa, and the side from which the samples were taken was marked on the request form by the phlebotomist. Twenty four hours later the patients were visited and the venepuncture site examined by one of us (AC). If a bruise was present its longest dimensions in perpendicular planes were measured and recorded, with details of any pain or discomfort experienced by the patient during or after venepuncture. The area of the bruise was estimated as shown in table 1.

Feedback and training
After the first audit the results were fed back and additional advice and training (based on Royal College of Pathologists’ recommendations for phlebotomists) was given to all the phlebotomists by ACC.

At the time of the initial audit the phlebotomists routinely taped a clean cotton wool ball to the venepuncture site and instructed the patient to apply pressure for a few minutes; haemostasis was therefore not always ensured before they left the patient. The recommendations after the first audit were that phlebotomists should stay by the patient until haemostasis had been achieved by their applying pressure with a cotton wool ball and examining the site at intervals until bleeding had stopped. The patient was then advised, when appropriate, to continue to maintain pressure with a clean cotton wool ball.

Follow up study
The audit was repeated on a further 100 consecutive patients six months after feedback.
Table 2 shows the number of patients in each 10-year age group with bruising after venepuncture; bruising was more common in older patients in both series (table 3). Table 4 shows the ranges of sizes of the bruises in both audits. In the first audit, before additional training 34/45 (76%) of bruises were >100 mm² in area whereas in the second audit this had fallen to 9/25 (36%) (with Yates's correction 9.0, p < 0.01).

Discussion

Studies of venepuncture have concentrated on how technique affects the results obtained from the sample in relation to calcium concentration, cholesterol concentration, blood cultures, cell counts, and several other indices. These are, of course, essential aspects of good venepuncture technique.

It is also important to ensure minimum discomfort to the patient and that he or she is not left with an unsightly bruise which may take a long time to resolve completely. Even if bruising is short lived it may affect the patient's perception of the service he or she receives. The incidence and the extent of bruising can be used as a measure of the quality of this aspect of care. It is a visible and measurable index.

We audited the incidence of bruising before and after simple modification of venepuncture technique and effectively showed improvement in the quality of our service. The modification was more effective in reducing bruising in older patients, who may be less able than younger patients to apply pressure to a venepuncture site.

This audit enabled us to set a standard for venepuncture technique for this department which can be measured objectively. Through periodical assessment we aim at ensuring that this standard is maintained. In addition, we are introducing a self-reporting card system to allow assessment of bruising after venepuncture in outpatients visiting our department.

We thank the phlebotomists and patients who agreed to participate in the study, and Mrs Sally Powis for preparing the manuscript.

Reducing bruising after venepuncture.

P G Godwin, A C Cuthbert and A Choyce

Qual Health Care 1992 1: 245-246
doi: 10.1136/qshc.1.4.245

Updated information and services can be found at:
http://qualitysafety.bmj.com/content/1/4/245

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/