Audit

Malaria chemoprophylaxis in British casualties returning from Afghanistan

N Lonsdale, N Green, J G Penn-Barwell

Introduction
British military personnel deploying on OP HERRICK to Afghanistan are exposed to a seasonal malaria risk from May to November (1). In accordance with current policy, all ranks are prescribed Anti-Malarial Chemoprophylaxis (AMC) and instructed to take it (2). All AMC regimes require continuation for a period after possible exposure. Therefore, personnel requiring medical evacuation from Afghanistan to the Role 4 facility at the Royal Centre for Defence Medicine (RCDM) should, depending on the time of year, be prescribed AMC.

This topic has been subject to two previous audits cycles, both of which have demonstrated poor compliance with this principle of care (3, 4).

This audit was repeated in order to quantify current AMC prescription rates in military personnel admitted to RCDM Birmingham and to determine whether there had been improvement since the previous audit cycle.

Methods
This study was registered with, and approved by, the Joint Medical Command as RCDM/Res/Audit/1036/12/0278. Patients medically evacuated from Afghanistan via AEROMED were identified from the RCDM AEROMED signal log. Cases were included if they were evacuated to RCDM during HERRICK 16A, i.e. from 1 May to 31 July 2012, during the malaria season.

The Bastion treatment record and the RCDM clinical notes, together with the PICS electronic prescription system, were examined to determine whether (i) the admitting medical staff had recorded a drug history on admission to RCDM and (ii) whether the patient was prescribed AMC during admission to RCDM. The record of drug prescription in Bastion was not regarded as an adequate substitute for a drug history in the RCDM clerking unless specific reference to this record was made by the admitting doctor.

This study audited current practice against the standard that 100% of patients admitted to British Military medical facilities on AMC should be continued on their AMC regime unless contra-indicated.

Results
There were 99 patients identified as returning via AEROMED to RCDM during the study period. Three patients were excluded due to incomplete records, resulting in a study population of 96 individuals. The majority of patients (n = 51, 53%) were admitted to the military ward 412, with details of other admission destinations detailed in Table 1. AMC was prescribed to 22 (23%) of patients admitted to RCDM. Of the 74 patients who were not admitted to RCDM during HERRICK 16A, i.e. from 1 May to 31 July 2012, during the malaria season.

<table>
<thead>
<tr>
<th>Admission unit</th>
<th>n (%)</th>
<th>AMC prescribed (% of patients in that unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military ward 412</td>
<td>51 (53%)</td>
<td>4 (8%)</td>
</tr>
<tr>
<td>ITU</td>
<td>17 (18%)</td>
<td>15 (88%)</td>
</tr>
<tr>
<td>CDU</td>
<td>20 (21%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Other</td>
<td>8 (8%)</td>
<td>1 (20%)</td>
</tr>
</tbody>
</table>

Table 1. Site of admission and rate of AMC prescription.

ITU = Intensive Care Unit; CDU = Clinical Decision Unit.
prescribed AMC at RCDM, 40 (54%) had been prescribed AMC while inpatients at the Role 3 facility at Camp Bastion, Helmand province. Rate of AMC prescription by admission unit is shown in Table 1.

Of the 74 patients who were not prescribed AMC on admission to RCDM, 52 (70%) had a documented drug history (DH) in their admission clerking with no reference to AMC. Two patients (3%) had a drug history recording use of AMC, but did not receive a continuing prescription; these patients were without a record for the omission on admission, e.g. contra-indication. Therefore, of the study population of 96 patients, 22 were prescribed AMC and 52 had a documented DH recording that they were not using AMC prior to admission, giving a compliance rate of 74/96 or 77% with the audit standard.

Discussion
This is the third cycle of the audit of prescription of AMC in military personnel returning from Afghanistan during the malaria season. These findings show a compliance of 77% against the standard that all patients should continue their AMC regime if they have been taking it, unless contra-indicated.

This audit was first performed in 2007 and it found 50% compliance with the standard (3). Using the same methodology and with a greater number of patients, this has increased to 77%. With respect to the overall proportion of patients prescribed AMC, this has similarly increased as shown in Table 2. This represents an overall improvement in care, though it is still short of the ideal standard of 100%.

The majority of patients prescribed AMC (15/22, 68%) were admitted directly to the Intensive Treatment Unit (ITU); AMC was prescribed in 15/17 (88%) of all ITU patients. We speculate that this is because ITU patients are managed by more senior clinicians who are familiar with delivering protocol-driven care. Since the majority of patients will be intubated on arrival and therefore unable to provide a drug history, the assumption that all should be prescribed AMC may result in high prescription rates. The corollary to this is that due to the low rate of compliance with AMC among British military personnel, several casualties who had not been taking their AMC will be started on it when they are admitted, with no clinical benefit.

The relatively low rates of prescription of AMC in those admitted to wards might reflect less experience of this issue, less familiarity with the requirement to prescribe military patients AMC, the ability to take an accurate DH from conscious patients or most likely a combination of these factors. The fact that two patients were documented as taking AMC and then not continued on their medication when admitted to the ward suggests that in at least some cases, poor adherence of medical officers to AMC protocols is a factor.

The role of the ‘Military Registrar’ to co-ordinate day-to-day care of military inpatients at RCDM was intended to ensure that the unique requirements of military patients were recognised and met (5,6). This role came into place in late 2009 and may well reflect the improvement in AMC prescription rates between the second and third (current) cycle of this audit.

Whilst not directly addressing the question of general adherence of deployment personnel to AMC policy, this repeat audit does suggest that general AMC compliance is poor. This may reflect the perception amongst personnel deploying to a mature theatre that the risk of malaria is low. However, the risk of malaria for troops deployed to Afghanistan is tangible, with a reported infection rate among US Army Rangers deployed to eastern Afghanistan for only 3 months in 2002, of 38/725 (7). There have been several cases of malaria among UK troops which are believed to have been contracted on military deployment to Afghanistan since operations began (personal communication, Defence Consultant Advisor for Microbiology, Gp Capt A Green).

The majority of troops would have been prescribed a daily/weekly combination of chloroquine and proguanil. It has been shown that military personnel have had a much greater compliance to a weekly-only regime, and this may also contribute to low compliance (8).

The authors would like to acknowledge the weakness in this audit. First as a review of notes and computer records, it is possible that we have failed to capture instances when patients were asked about their AMC status and this was

<table>
<thead>
<tr>
<th>Audit Cycle</th>
<th>Year</th>
<th>Proportion of inpatients prescribed AMC (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2007 (3)</td>
<td>4/26 (15%)</td>
</tr>
<tr>
<td>2</td>
<td>2008-9 (4)</td>
<td>5/305 (2%)</td>
</tr>
<tr>
<td>3</td>
<td>2012</td>
<td>22/96 (23%)</td>
</tr>
</tbody>
</table>

Table 2. Proportion of AEROMED patients admitted to RCDM who are prescribed AMC per audit cycle.
simply not documented. Secondly there are methodological differences between the second cycle of this audit and the first and third (current) cycles, limiting the validity of direct comparison. The second audit cycle did not review notes looking for a recorded drug history or limit the study period to the malaria season.

Conclusions and recommendations
Historically, the British military have repeatedly learnt the importance of adherence to AMC regimes, from the 14th Army in Burma 1944, to OP PALLISER in Sierra Leone in 2000. It is likely, with the return to contingency, that the RN and wider military will be tasked with expeditionary operations in malarial zones east of Suez. Complacency towards communicable disease prophylaxis will result, as it always has, in unnecessary disease non-battle injuries (DNBI) and a reduction in operational effectiveness. Poor compliance among non-medical military personnel should be discouraged by command; poor compliance in appropriate prescription of AMC by Medical Officers to their patients must be addressed.

The repetition of this audit clearly demonstrates a persisting need for greater awareness of this issue among medical staff at RCDM. We again recommend that all patients returning from a malarial zone be asked specifically if they are taking AMC and that this be clearly documented. Medical staff responsible for admitting patients evacuated from malarial areas need to be aware of the importance of continuing AMC and the duration for their continuation.

References

Authors:
Flight Lieutenant N Lonsdale MB ChB RAF, Royal Centre for Defence Medicine (RCDM), Birmingham, UK.
Surgeon Lieutenant N Green MB ChB RN, RAF Cranwell, UK.
Surgeon Lieutenant Commander JG Penn-Barwell MSc MRCS RN, Academic Department for Military Surgery and Trauma, RCDM, Birmingham, UK.

Corresponding Author:
Surgeon Lieutenant Commander JG Penn-Barwell RN, Jowan@doctors.net.uk