A review of routine vaccinations in the Special Operations Working Accommodation, Holsworthy, Sydney, NSW

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Abstract

Background: The Tobruk Lines Health Centre (TLHC) is the primary health care facility for the Special Operations Working Accommodation (SOWA) at Holsworthy Barracks, Sydney. TLHC has responsibility for maintaining routine vaccination currency of members, a component of operational readiness.

Purpose: This study aims to utilise an electronic database to audit vaccination currency at SOWA and ascertain which routine vaccinations are due.

Materials and Methods: A review of TLHC vaccination statistics on the ADF's Medical Information Management Index (MIMI) was performed, followed by a manual audit of the medical documents of each member with routine vaccinations due.

Results: The audit found that 78 SOWA members were due at least one routine vaccination, representing approx 9.75% of TLHC's dependency (i.e. 90.25% of members were up-to-date with routine vaccinations). A total of 94 vaccinations were due, with 73 of these being for typhoid vaccination.

Conclusion: The discrepancies between several members' written vaccination records and the records on MIMI suggest greater efforts need to be made to keep MIMI data up-to-date. The large number of typhoid vaccinations due suggests that the need for boosters should be anticipated when members undergo Annual Health Assessments (AHA) and/or pre-deployment medicals. A follow-up audit would assess the accuracy of vaccination records for those members recorded on MIMI as being up-to-date with routine vaccinations.

Key Words: routine vaccinations, Special Operations Working Accommodation, Tobruk Lines Health Centre, Medical Information Management Index

Conflict of Interest

Dr Colgrave is a Medical Officer based at SOWA.

Introduction

SOWA is located in Tobruk Lines, a precinct within Holsworthy Barracks, South Western Sydney. SOWA is a new facility, completed in 2008 to accommodate special operations units in the Sydney area, and currently houses the 2nd Commando Regiment (2 Cdo), the Incident Response Regiment (IRR), and elements of the Special Operations Logistic Squadron (SOLS) and Special Forces Training Centre (SFTC). The primary health care for members in the SOWA is provided by a mix of uniformed, public service and contracted health care providers including medical officers, nursing officers, physiotherapists, psychologists, medical assistants and enrolled nurses.

The Medical Information Management Index (MIMI) is a non-proprietary suite of linked databases developed in MS Access. It is widely implemented across the ADF and includes the ability to track medical records, record administrative details regarding appointments and referrals, as well as record the elements of individual health readiness and identify members who are out-of-date. TLHC has been using this system as the basis to record vaccinations since 2008.

According to the MIMI, as of 5 Jan 10, TLHC currently has a dependency of approximately 800 full-time members (precise number withheld). This includes regulars and members on continuous full-time service. 97.2% of these members are male, with females making up the remaining 2.8%.

Routine vaccinations in the ADF are given in accordance with ADFP 1.2.2.1 – Immunisation Procedures.[1] Obtaining and remaining in date for the vaccinations listed in Table 4-1 of ADFP 1.2.2.1, is an integral part of the medical fitness component of a member's Army Individual Readiness Notice (AIRN), that is, readiness to deploy on operations. Members therefore not in date for routine vaccinations cannot deploy on operations unless granted a waiver. This can be a time-consuming process. Further, should

Disease	Vaccines	Dose	Primary Schedule	Booster Requirements
Diphtheria **Tetanus** **Pertussis**	Adult/adolescent formulation of diphtheria-tetanus-acellular pertussis (dTpa) ('Boostrix')	0.5ml IM	A total of 3 doses of dT, 4 weeks between doses	1 dose at age 15-17 or instead of dT dose
	Adult diphtheria-tetanus (dT) ('ADT')	0.5ml IM		1 dose every 10 years
	Tetanus toxoid vaccine ('Tet-Tox')	0.5ml IM		1 dose every 10 years
Poliomyelitis	Inactivated poliomyelitis vaccine (IPV) ('IPOL')	0.5ml SC	3 doses 4 weeks apart	1 dose every 10 years (if deploying to polio endemic area)
	Oral poliomyelitis vaccine (OPV) ('Sabin')	2 drops PO		
Hepatitis A **Hepatitis B** **Typhoid**	Monovalent hepatitis B ('H-B-Vax II Adult)	1ml IM	3 doses at 0, 1 and 6 months	None
	Combined adult hepatitis A and B ('Twinrix 720/20')	1ml IM		None
	Monovalent hepatitis A ('Avaxim')	1ml IM	2 doses 6 months apart	None
Measles, Mumps and Rubella	Combined typhoid Vi polysaccharide and hepatitis A ('Vivaxim')	1ml IM	1 dose (followed by 'Avaxim' at 6 months)	None
Varicella-Zoster	Typhoid Vi polysaccharide ('Typhim Vi')	0.5ml IM	1 dose	1 dose every 3 years
	Measles-mumps-rubella (MMR) ('Priorix')	0.5ml IM or SC	2 doses 1 month apart	None
	Varicella-zoster vaccine (VZV) ('Varilrix')	0.5ml SC	2 doses 1-2 months apart (for non-immune persons)	None

Table 1 – Routine vaccinations in the ADF adapted from ADFP 1.2.2.1, Table 4-1

a waiver be granted and a member deploy, there is an element of risk that they will be exposed to vaccine preventable diseases. This could result in a member being medically evacuated from a deployed environment. A list of routine vaccinations for ADF personnel, as described in Table 4-1 of ADFP 1.2.2.1, is reproduced in Table 1.

When ADF members posted to SOWA units receive a vaccination at TLHC, the details of this encounter are entered into MIMI. A written record of the vaccination is also made in each member's *International Certificates of Vaccination (ICV)* booklet. Likewise, when new members march-in to SOWA units and hand their medical documents into TLHC, their ICVs are reviewed and details updated on MIMI, if necessary. This would, ideally, mean that each member's MIMI vaccination record corresponds reliably with the details in their ICV.

Material and Methods

A review of TLHC vaccination data on MIMI was performed on 05 Jan 10, with the aim of ascertaining the percentage of the Centre's dependency that was in date for routine vaccinations. Details on the number and percentage of the TLHC dependency in date for routine vaccinations can be easily obtained from the Key Performance Indicators (KPI) from the main screen of MIMI by all health personnel at TLHC. The ICV of each member due routine vaccinations was then manually audited to reconcile vaccination records with MIMI.

Results

MIMI showed that approx 88.0% of TLHC's dependency was in date for routine vaccinations, with 99 members recorded as being due at least one routine vaccination. MIMI can generate the names and PM KeyS (ADF identification) numbers of members due vaccinations, along with details of the vaccinations and date they were due to be given. This list showed that there were 162 vaccinations due across 99 members, with six members recorded as missing eight vaccinations. The due dates for vaccinations ranged from 15 Dec 09 back to 22 Mar 98.

A closer review of the MIMI data revealed that several non-routine vaccinations were listed as being due, thereby increasing both the number of outstanding vaccinations and the personnel involved, and adversely affecting the vaccination Key Performance Indicator (KPI) of TLHC. Fourteen members were recorded as being due influenza vaccination, 10 due meningococcal vaccination (Mencevax ACWY or Menomune) and 10 due Japanese Encephalitis vaccination (Je-Vax). These three vaccinations are not routine vaccinations as dictated by ADFP 1.2.2.1, however are generally mandatory for personnel in special operations, given the command's high readiness requirement. Nonetheless, failure to receive any or all of these vaccinations does not affect AIRN compliance.

Enquiries made to the MIMI Helpdesk revealed that a programming fault meant some of the members missing up-to-date details for influenza vaccination, Mencevax ACWY or Je-Vax were erroneously listed on the database as requiring routine vaccinations. The software was updated on 06 Jan 10 to remove the three additional vaccinations from the 'Members Due ADF Routine Vaccinations' list and place them 'Vaccinations Due' list, which lists all vaccinations (both routine and additional) due. Following this update, the number of members due routine vaccinations fell to 93 (130 vaccinations), representing a KPI (percentage of dependency in-date for routine vaccinations) of approx 88.4%. This highlights the benefit of MIMI having an accessible helpdesk service that is receptive to making immediate adjustments to the software when faults are identified.

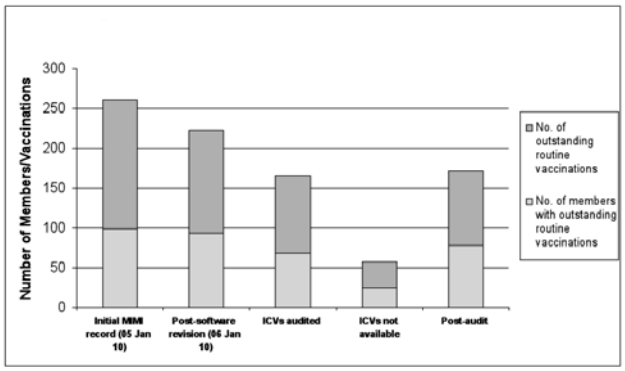

Figure 1 – outcome of MIMI routine vaccination audit

An audit of the vaccination booklets of all 93 members with outstanding routine vaccinations was then attempted. The medical documents for only 68 of these members (accounting for 97 outstanding vaccinations) were present at TLHC on 06 Jan 10, with the other 25 (33 vaccinations) presumably with the members deployed overseas or on ADF courses, or en route to another health facility as part of the 2010 posting cycle. The ICV for the 68 members were reviewed and MIMI updated accordingly. There were 36 cases involving 15 members where vaccinations had been recorded in member's ICV but not in MIMI. Once these were entered into MIMI, the number of members due routine vaccinations in MIMI fell to 78 (94 vaccinations), with a revised KPI for vaccination status of approx 90.3%. This could be broken down into 53 members with ICVs at TLHC (61 vaccinations) and 25 members with ICVs absent (33 vaccinations). The audit had increased this KPI by nearly 2%, with the number of outstanding vaccinations falling 42% (162 to 94). The outcome of the audit is illustrated in Figure 1.

The most frequently occurring vaccination due was typhoid (Typhim Vi), with 73 outstanding. This represented 77.7% of outstanding routine vaccinations and 93.6% of the 78 members with vaccinations due. The other outstanding vaccinations were poliomyelitis (IPOL or Sabin), with nine members due, MMR (four members), ADT (four members) and Twinrix (four members). These findings are shown in Table 2 and Figure 2. One explanation for the high percentage of outstanding typhoid vaccinations is the requirement for typhoid boosters every three years, compared with ten years for ADT and poliomyelitis and lifelong immunity for other routine vaccinations.

Vaccination	No. of Members Due
Typhoid ('Typhim Vi')	73
Poliomyelitis ('IPV' or 'Sabin')	9
MMR ('Priorix')	4
ADT	4
Hep A & B ('Twinrix')	4
Total	94

Table 2 – Routine vaccinations due at SOWA

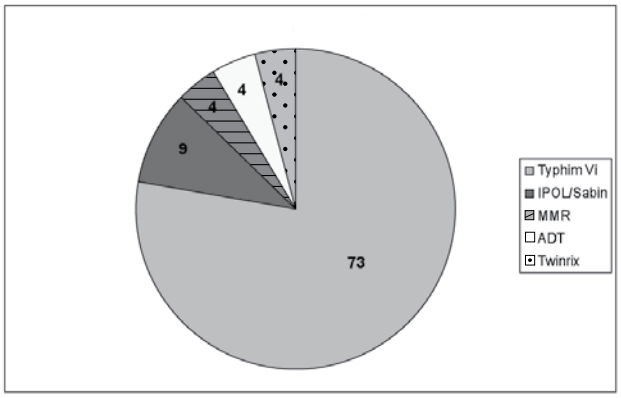

Figure 2 – No. of outstanding routine vaccinations post-audit

Discussion

The findings of the audit suggest that the KPI statistics on vaccinations recorded in MIMI do not necessarily reflect the actual number of routine vaccinations due.

Vaccinations are occasionally recorded in ICV booklets only and not in MIMI, falsely inflating the number of vaccinations outstanding. TLHC will need to give greater emphasis to data entry into MIMI to ensure the reliability of the information it conveys to Joint Health Command, SOCOMD [define abbreviation]and the Area Health Service.

The high number of typhoid vaccinations due shows that boosters are not being given in a timely fashion. All members are required to undergo an Annual Health Assessment (AHA), and many SOWA members also undergo pre-deployment medicals each year. At these presentations, vaccinations are reviewed to ensure their currency. However, it would appear that this opportunity to anticipate the lapsing of typhoid vaccination currency during the subsequent 12 months is not always taken. If this was done, members could be either be given a booster at the AHA or pre-deployment medical if it was due, or reminded of the date when their booster is due and an appointment made. Additionally, greater use of written reminders to members regarding due vaccinations should be utilised. Such reminders can be automatically generated by MIMI through each member's online vaccination record.

Maximising the proportion of SOWA members that are up-to-date with their routine vaccinations is an essential step in maintaining individual and unit readiness. TLHC has a duty of care to ensure that members are medically fit to deploy and adequately protected from diseases that may be exposed to when overseas.

Conclusion

This was an audit to gauge how accurate vaccination status was reflected in MIMI. It was an incomplete audit as it only looked at those members flagged on MIMI as requiring a routine vaccination and did not confirm the accuracy of the vaccination records of those members shown as being up-to-date. It is possible that members' MIMI records have erroneous vaccination entries, thereby artificially inflating the routine vaccination KPI and recording members missing vaccinations as medically fit to deploy. Expanding the audit to include a review of all TLHC member's ICV to identify false positives in regards to routine vaccinations on MIMI in planned. The audit demonstrated the benefit of having ready access to a team that can correct programming errors in MIMI. It also highlighted the need for accuracy when recording vaccinations and the need for an ongoing process to audit information held in electronic systems.

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