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Letter to the Editor

A successful cost effective Meticillin Resistant *Staphylococcus aureus* (MRSA) eradication protocol implemented at a Tertiary Care Unit

Sir,

Eradication of Methicillin Resistant *Staphylococcus aureus* (MRSA) is proven to reduce postsurgical infections following cardiothoracic surgeries [1]. We implemented a home based eradication protocol in a tertiary care hospital on patients who were waiting for cardiac surgeries who were found to be with MRSA colonisation.

This study was based on the implementation of a MRSA eradication protocol for preoperative cardiothoracic patients at home as the preexisting protocol was designed for in-hospital patients, which added burden, financially to the patient and the family, and to the hospital, increasing bed occupancy. It was a prospective study with collection of data from patients' laboratory reports which was done for 22 consecutive months. The protocol was implemented on patients colonized with MRSA, and performed either at home or hospital. The same protocol was followed if the patient was found to be positive with MRSA again. This protocol involved:

- Application of a match-head size 2% mupirocin ointment to each nostril three times a day for five days
- Application of 4% chlorhexidine to the entire body on day one, three and five, leave for five minutes and wash.
- Application of 4% chlorhexidine to body sparing scalp on day 2 and 4, leave for five minutes and wash.
- Daily change of towel, bed linen and clothes
- Re-swabbing after completion of day 5.

The results on nasal, throat, axillary and perineal swabs and the number of cycles of the protocol required for complete eradication were the only data collected during the study. Out of 1590 patients screened, 50 (3.14%) were found to be colonized with MRSA. Two were excluded because one died and the other underwent an emergency surgery prior to implementation of the protocol. The commonest site for harboring MRSA was nasal colonization amounting to thirty three (68.75%) and six (12.5%) had colonization of multiple sites.

Once the first cycle of eradication protocol was completed, only 3 (6.25%) were found to still harbor MRSA, and they all were nasal colonisation. They were completely eradicated after the second cycle. Out of 48 participants, 41 underwent the first cycle of eradication at home, and the rest underwent as in-hospital patients. Only 3 from the home based group were found to harbor MRSA, and they were admitted to the ward for second cycle.

Cost evaluation revealed a saving of about LKR 100,650 (USD756, USD 1 = LKR 133) per patient of direct expenditures when the protocol was implemented at home, compared to hospital based eradication. Indirect expenditures such as traveling and lost income were not calculated.

As per protocol, all 4 sites nasal, throat, axillary and perineal areas were screened for colonisation. This screening for MRSA was performed because the bacteria could colonize any of these sites [2]. In this study it was proved that the commonest site was nose, but a significant percentage of patients harbored MRSA in other sites only, which would have been missed if not sampled.

This protocol relied on mupirocin and chlorhexidine for eradication of MRSA colonisation. They are common decolonising agents and have been used extensively in a number of protocols [3,4]. Some studies have used antibiotics along with their protocols [5]. Antibiotics were deliberately avoided in our study as it adds complications of drugs to patients, high risk of development of resistance and cost [6].

The success of our protocol was due to the key step adopted, to change bed linen and clothes daily during implementation of protocol. As colonised patients' skin scales harboring MRSA, will contaminate the linen and lead to recolonisation, as shown in some studies [7]. Hence daily changing of linen was implemented. It proved to be beneficial towards the final outcome, which had a high success rate compared to other studies, which needed several cycles to achieve complete eradication. Buehlmann et al needed 1–10 cycles for total eradication [3].

One of the main aims in implementation of this protocol was to establish a home based eradication program. This cost saving protocol was successfully implemented with patient education, patients' compliance and cooperation along with the assistance of the infection control team. In addition to the money saved on hospital admission for eradication, other aspects of benefits were minimal disturbance to the daily routines, reduced loss of daily income, less burden on the family and overall patient satisfaction, none of which were

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evaluated monetarily. Also it is noteworthy to mention that reduced prehospital stay itself reduces the postoperative infection rates, which again was not evaluated in this study.

In summary, this antibiotic-free, home based protocol led to successful eradication of MRSA from colonized patients awaiting for cardiothoracic surgeries, helped to minimize healthcare costs by LKR 100,650 (USD756, USD 1 = LKR 133) per patient. It can also therefore lead to reduced postoperative and antibiotic resistant infections through reduced pre-operative hospital stay.

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