Executive Summary

[Adapted from the report by Siti Mariam Mohtar]

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Introduction

The introduction of totally implantable venous access devices or chemoports in 1980s provide an easy vascular access for delivery of chemotherapy, fluids, medications, blood products and parenteral nutrition solutions.It has become widely used for central venous access and in United States alone, more that 400 000 of such device were sold each year. The use of antibiotic prophylaxis for these implanted devices remains controversial despite the prevalence of it. Currently, there is no standard of care regarding antibiotic prophylaxis for fully implanted central venous access devices.

The risk of totally implantable venous access device-related infections in patients with cancer seems to have remained unchanged over time, with infection rates of 0.21 in 1993 and 0.20 in 2011. Owing to the reduced risk of infection, totally implantable venous access devices are favoured over other long-term intravascular venous catheters for use in treatment of solid tumours and haematological malignant disease.

Early totally implantable venous access device-related infections (30 days or earlier) are more frequently caused by S. aureus than late infections (50% vs 12%). The risk of extraluminal colonisation is low and mostly occurred during insertion which results in surgical site infections. Although totally implantable venous access device-related infections are uncommon compared with other types of catheters, the cost to treat these infection are costly and usually necessitate removal of the device. This would delay the administration of chemotherapy and require an increase in the level of care (hospital admissions).
Prevention is critical to minimize the likelihood of infections associated with implantable ports, as these are difficult to treat and potentially fatal.

Totally implantable venous access device is available in Malaysia. Questions arise as to whether giving prophylaxis antibiotic before insertion of such devices would reduce the risk of getting infections. This technology review was requested by a pharmacist to assess the cost-effectiveness of antibiotic prophylaxis in totally implantable venous access device insertion.

Objective/Aim

The objective of this systematic review was to assess the safety, efficacy / effectiveness, economic and organizational implication of antibiotic prophylaxis for totally implantable venous access port insertion.

Results and Conclusions

A total of 296 titles were identified through the Ovid interface. There were seven studies included in this review: four RCTs, one cohort study and two cross-sectional studies. The studies were conducted in Italy, Turkey and United States. There was no cost-effectiveness analysis article retrieved.

Efficacy / Effectiveness
There were six studies retrieved on the efficacy / effectiveness of antibiotic prophylaxis in totally implantable venous access port or chemoport insertion.

There was fair level of retrievable evidence to suggest that antibiotic prophylaxis for chemoport insertion was not effective in reducing infection rates.

- About 47% (15/32) of patients in the teicoplanin arm developed infections compared to 37% (11/30) in the control arm, p = not significant.

- No significant difference in infection rates, body temperatures and white blood cell count in antibiotic group and non-antibiotic group.
- Wound infections were reported in 2.5% (5/201) of the placebo group versus 3.0% (6/203) in the antibiotic prophylaxis group (no significant difference).
- Catheter related infection was reported in 2.5% (9/356) in group that did not receive antibiotics before the procedure and 0% (0/103) in the prophylaxis group, p = 0.218.
- Central line-associated bloodstream infections within 30 days were reported in 0.6% (7/1,102) of those who did not receive antibiotic prophylaxis versus 0% (0/81) of those who received antibiotic prophylaxis (p = 0.59).

In terms of safety, there was very limited retrievable evidence. However, severe nausea and vomiting were reported as adverse events in one study. There was no retrievable evidence on cost-effectiveness. Few international guidelines did not recommend the use of antibiotic prophylaxis in chemoport insertion.

Methods

Electronic databases were searched through the Ovid interface: Epub Ahead of Print, In-Process & Other Non-indexed Citations, Ovid MEDLINES ® Daily and Ovid Medline ® 1946 to Present, EBM Reviews - Cochrane Central Register of Controlled Trials - July 2015, EBM Reviews - Cochrane Database of Systematic Reviews - 2005 to June 2015, EBM Reviews - Health Technology Assessment – 3rd Quarter 2015, EBM Reviews – NHS Economic Evaluation Database 2nd Quarter 2015, and EMBASE. Google was used to search for additional web-based materials and information. No limits were applied. Additional articles were identified from reviewing the references of retrieved articles. Last search was conducted on 15 October 2016.