

# Significant Savings Achieved By Implementing Event Related Outdating

By J. Lamb, S. Foster, E. Henderson, & W. Krulicki

## Introduction

The event related outdating (ERO) theory is based on the assumption that items that have been properly cleaned, wrapped, sterilized, stored and handled will remain sterile indefinitely unless the integrity of the package becomes compromised. Hospitals have traditionally outdated or reprocessed re-usable sterile products (RSP) based on unscientific dates that were established years ago. These predetermined expiration dates vary among institutions. An ERO policy does not jeopardize patient care or increase inter-operative risks. Although not widely practiced in Canadian hospitals, ERO is supported by research and practice standards.

## Abstract

The event related outdating(ERO) theory is based on the assumption that items that are properly cleaned, wrapped, sterilized, stored and handled will remain sterile indefinitely unless the integrity of the package becomes compromised. The authors describe how one Surgical Suite (performing approximately 600 cases/month) implemented an ERO program with estimated annual savings of almost \$10,000/year.

## Literature Search

As long ago as 1984, Mayworm suggested that the practice of outdated sterile goods was archaic. Instead, he postulated that properly packaged material would remain sterile indefinitely. A literature search revealed there have been several studies supporting this theory. A study by Klapes et al in 1987 showed that storage periods of up to fifty weeks did not increase the probability of contamination, regardless of the wrapping material. More recently, Donovan, Turner and Smith (1991) presented two case studies where hospitals converted their central sterile storage policy and procedure from "time related" to "event related". This eliminated the need of expiration dates on their in-house sterilized products. Chadwick (1994) describes successfully implementing an ERO system

## Authors

The authors are employees of the Calgary Regional Health Authority, Bow Valley Site. At the time this project was undertaken, Jeanne Lamb, RN, BN, was Assistant Nursing Unit Manager of the Surgical Suite. Sheila Foster is the working leader, Surgical Reprocessing. Dr. E. Henderson, Ph.D., Epidemiology, Associate Professor, University of Calgary, is an Epidemiologist, Infection Control. Wally Krulicki is a research technologist, Infection Control.

Table1

**Monthly Testing of Randomly Selected Items**

Method of Sterilization	Items Tested N (%)	Types of Packaging N (%)	Items Tested N (%)
Steam	122 (66.7)	PeelPack	79 (64.8)
		Clothwrap	24 (19.7)
		Other	19 (15.5)
ETO	61 (33.3)	Peel/Stripack	48 (78.7)
		Other	13 (21.3)

at the York Central Hospital. Current standards and recommended practices of the Association for the Advancement of Medical Instrumentation (AAMI), the Association of Operating Room Nurses (AORN), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Center for Disease Control (CDC) support ERO (AORN, 1994, Schroeder, 1994). The Canadian Standards Association states that "shelf life is event related" (Canadian Standards Association, 1991). In addition, the Operating Room Nurses Association of Canada (ORNAC) *Recommended Standards of Professional & Clinical Practice* state that "Shelf life is event related rather than time related. Dates shall be utilized as a method to rotate materials and reduce the time packages and items are exposed to factors that may result in contamination" (ORNAC, 1993).

## Implementation

Following the literature review, it was determined by OR management and Infection Control that there was enough evidence to support ERO. In January 1995 a search of the OR produced twelve items with expiry dates from January 1991 to November 1994. Most of these reusable items were articles that did not require sterility to be maintained (e.g., oral suction). Eleven of these items were in peel packs, and one was in a cloth wrapper. Mean time from expiry date was 809 (+/-155 days). The range was 81 - 1496 days. These items had originally been either steam or ethylene oxide sterilized (ETO). The items were aseptically

Table2

**Estimated Cost Savings**

	Weekly Savings (\$)	Annual Savings (\$)
Materials *	35	1820
Sterilization	157	8164
<b>Total**</b>	<b>192</b>	<b>9984</b>

\*Wrappers, filters, tape, cart covers, etc.  
\*\*Staff were assigned other duties

cultured in a HEPA-filtered hood. All surfaces were sampled using two swabs. One swab was placed on a SABOURAUD AGAR plate (for fungi) and the other in Mueller-Hinton broth (for bacteria). Cultures were incubated at 37degrees C and checked daily. No growth was detected after seven days observation. A draft policy and procedure was developed and presented for approval to the Infection Control Committee. This policy included:

- (1) discontinuation of expiration dates;
- (2) labeling of each RSP with sterilization date and sterilization load indicator for recall purposes;
- (3) inspection of all packaging prior to use for external or internal indications of damage; and
- (4) emphasis on the importance of proper storage and rotation of inventory.


## Results

The policy and procedure was implemented in February of 1995. A continuous quality monitoring process, whereby ten items per month were randomly selected for culturing was also implemented at this time. (Table 1). After eight months of quality assurance monitoring, there was no growth on the sterile items. It was decided at that time to reduce the quality monitoring to ten items every six months.

Our OR does approximately 600 general surgery, major orthopedic, neurosurgery, plastic, urological and peripheral cardiovascular procedures per month. The estimated savings for materials and sterilization costs is \$9984 annually (Table 2). The time saved by the staff in gathering, re-wrapping, reprocessing and reshelving the items was not included in the estimates. The ERO policy has been implemented in Labour and Delivery as well as another Surgical Suite in the city. Hospital-wide implementation throughout the Calgary Regional Health Authority is recommended. Use of this policy can achieve significant savings.

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