Antibiotic Prophylaxis (Assay)

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The age of antibiotic prophylaxis began shortly after world War II with the introduction of penicillin to the general population and received significant impetus from the introduction of the first American Heart Association (AHA) recommendations for the prevention of bacterial endocarditis (BE) in 1955. Since that time, considerable effort has been expended to prove its efficacy, develop the appropriate drugs and dosages and determine its clinical indications. It was not until the mid-1980s that any attention was directed towards its potential adverse effects, particularly regarding penicillin allergy. Currently, one of the major concerns with antibiotic prophylaxis is its use in large populations and how this might contribute to the global problems with microbial resistance to antibiotics(levy,2002)

The potential value of antibiotic prophylaxis is based upon an assumption that if antibiotics aid host defenses problems with microbial resistance to antibiotics to eliminate infections and restore homeostasis, then they must prevent infections. That these are very different microbiological processes has essentially gone unappreciated. On the one hand, antibiotics kill or prevent the growth of microbes that will be eliminated eventually by the patient's immune system, while on the other, the antibiotic is expected to prevent the colonization of any or all microbes of varied virulence adhesion factors, nutritional requirements and antibiotic sensitivity in any or all organ systems. One ends microbial virulence, while the other anticipates it antibiotic prophylaxis as a public health measure has a serious fault. In most public health prevention measures (sanitation, fluoridation, immunization), it is required that the benefits greatly outweigh the risks nearly, the risk must be minimal and the benefit great as millions will receive the proposed preventive

measure. With antibiotic prophylaxis, just the opposite occurs: virtually, no one will benefit except for a few This also assumes that prophylaxis is effective, although there are limited experimental and clinical data to support this assumption. Great care should be taken to support this assumption. Great care should be taken to document the efficacy of a procedure that will be applied to many in the hope that a few will benefit. (Levy ,2002; Bratzler *et al.*, 2006).

Prophylactic antibiotics are defined as antibiotics used to prevent infection. Approximately one-third of hospitalized patients receive antibiotics and, of these, one-half receive prophylactic antibiotics, primarily for surgical procedures. Although early studies in the 1950s and 1960s concluded that prophylaxis was not helpful, many of these studies were poorly done, and the basic principles of a ppropriate prophylactic antibiotic use were not understood. In reality, patients often were given therapeutic antibiotics; that is, the infection had already occurred. Since these early studies, data have shown clearly that prophylactic antibiotics are useful in certain circumstances.

Wound infections are the second or third most common nosocomial infections among all hospitalized patients. In many settings, appropriate prophylactic use of antimicrobial agents often can reduce the incidence of postoperative wound infections (Dellinger *et al*. ,1994; Talbot and Kaiser, 2005; Bratzler and Hunt,2006).

The goals of prophylactic administration of antibiotics to surgical patients are to: (Culver *et al*.,1991).

* Reduce the incidence of surgical site infection
* Use antibiotics in a manner that is supported by evidence of effectivenes
* Minimize the effect of antibiotics on the patient's normal bacterial flora
* Minimize adverse effects
* Cause minimal change to the patient's host defenses.(Engelman *et al.*, 2007).

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