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Selective Digestive and Oropharyngeal Decontamination in Medical and Surgical ICU Patients

Jean Louis Vincent*
Department of Diagnostics and Public Health, University of Verona, Italy

DESCRIPTION

Selective Gastrointestinal Decontamination (SDD) regimens, which vary and consist of Topical Antibiotic Prophylaxis (TAP) and Protocolized Parenteral Antibiotic Prophylaxis (PPAP), are highly effective in preventing ICU-acquired infections. Appears to be valid only within Randomized Controlled Studies (RCTs). Confusingly, SDD is also a concept that, if true, implies benefits to the population. Selective Gastrointestinal Decontamination (SDD) is a polymorphic antibiotic regimen and an untested concept. SDD regimens appear to be highly effective in preventing ICU infections. The SDD concept began 50 years ago as part of an experiment to improve supportive care for patients with neutropenia. Similar to immunization measures, SDD concepts have implications for infection prevention for both individual patients and population groups. SDD has some confusing aspects. The use and composition of SDD therapy has deviated significantly from what was originally thought. It is neither a single regime nor a protocol. Despite extensive research in various patient groups in intensive care units, hematologists, and other immunocompromised patients, the mechanism of action, benefits, and associated risks remain unclear. SDD studies used different study designs, different endpoints, and different target groups. The concept of SDD emerged 50 years ago when neutropenia was a major limiting factor in the development of effective anti-leukemia chemotherapy. *Pseudomonas* and other Gram Negative (GN) bacteremia complicating chemotherapy-associated neutropenia are associated with high mortality. Protective isolation was necessary to prevent acquired infections in high-risk neutropenic patients during this period when there were few effective antipseudomonal antibiotics. The time course of colonization resistance was characteristic, with a nadir at 4 days after antibiotic exposure and recovery at 3 weeks. Recovery corresponds to the time required to clear the challenging bacteria from the intestinal tract. Finally, and most strikingly, this resistance to colonization was amplified upon recovery. That is, germ-free mice acquired colonization resistance from recovered mice housed in the same cage or were even simply housed in cages contaminated with the fecal flora of recovered mice. Implementation of the concept in clinical applications followed, as the concept of SDD could clearly not be validated in humans and replication of the challenge study in irradiated chimeric mice was not possible. As colonization resistance appeared to be most closely associated with anaerobic flora, this led to a “traffic light” classification of therapeutic antibiotics for at-risk patients. ‘Red light’ antibiotics such as amoxicillin and clindamycin, which are known to be active against anaerobic flora, should be avoided to minimize loss of formation resistance. It is difficult to summarize the results of colonization resistance experiments with limited human volunteers. It varied widely among human volunteers and was difficult to quantify. In particular, some findings in humans differed from findings in laboratory mice. The traffic-light classification of antibiotics was abandoned, and two ‘amber’ antibiotics, trimethoprim-sulfamethoxazole and cefotaxime, each showed potential anti-anaerobic activity at high doses, leading to hematological and it was later introduced as an important component of SDD regimens used in mechanically ventilated ICU patients. Ideally, the properties of an enteral (TAP) antibiotic include activity against *Pseudomonas*, non-absorbability (to maximize activity within the intestinal lumen), and well-tolerated and inexpensive. More than 20 TAP regimens with various combinations of 2 or 3 enteric antibiotics such as polymyxin, tobramycin, gentamicin, netilmicin, or nalidixic acid have been empirical because no single antibiotic meets all criteria was led to Confusingly, other ‘SDD’ therapies developed to prevent

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Corresponding author Jean Louis Vincent, Department of Diagnostics and Public Health, University of Verona, Italy, E-mail: jl_vincen@ulb.ac.it

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bacteremia in neutropenic patients include trimethoprim-sulfamethoxazole, ciprofloxacin, norfloxacin, ofloxacin, and cefuroxime. Contained drugs that were systemically absorbed after oral administration.

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CONFLICT OF INTEREST

The author declares there is no conflict of interest.