

"The efficacy, effectiveness & efficiency of Hyperbaric Oxygen Therapy(HBOT) in infectious disease & complications"

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1-summary: Efficacy, in the health care sector, is the capacity of a given intervention under ideal or controlled conditions. Effectiveness is the ability of an intervention to have a meaningful effect on patients in normal clinical conditions. Efficiency is doing things in the most economical way (1) . HBOT is a technique in which a patient is exposed to 100% oxygen (O₂) for a determined period of time and a certain pressure, which is higher than atmospheric pressure, in a special monoplace or multiplace chamber. O₂ pressure for HBOT should be at least 1.4 atmosphere absolute (ATA) or higher. On the other hand HBOT has been described as a useful procedure for different infectious disease & complications such as necrotizing fasciitis, osteomyelitis(2) gas gangrene, compromised grafts and flaps(3) , hidradenitis suppurativa, pyoderma gangrenosum (4). In between, facilitation in translation of HBOT efficacy research results to effectiveness clinical intervention is a subject that needs to evaluation with respect to cost-efficiency limitations.

2-Methods-Results: In this research, we evaluated database of google scholar, pubmed, scopus and web of science for 2018-2022 by key words including:

Efficacy, effectiveness, efficiency, hyperbaric oxygen therapy, HBOT, infection.

Results of our study as follows that Undersea and Hyperbaric Medical Society (UHMS) and the European Committee for Hyperbaric Medicine (ECHM) and other dependent authorities in the world have groups or tables of conditions as indications (absolute, general, relative) or recommendations (strongly, recommended, optional) of infectious disease & complications such as clostridial myonecrosis, soft tissue radionecrosis, osteomyelitis, intracranial abscess, diabetic foot wounds, burns and anaerobic or mixed infection(4,5). The almost all of indications or recommendations getting from randomised control trials (RCTs) which generate evidence on efficacy of intervention. But some researchers for

results that can generate evidence on efficacy and effectiveness of intervention, propose " Efficacy and Effectiveness too (EE2) trial" versus conventional "efficacy-to-effectiveness (E2E) trials. In an EE2 trial, assessments of efficacy of intervention for regulatory approval and effectiveness for real-world use are simultaneously addressed in a single trial(6).

3-Conclusion:It seems specially in military scientific and clinical trials we can generate efficacy and effectiveness evidence of indications/recommendations of HBOT in infectious disease & complications simultaneously respect to affordable and cost-efficiency of EE2 trials for translation of research knowledge to clinical intervention.

4-References:

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