

Fabricating a Novel "Reverse Aerator" Negative Pressure Wound Therapy Device in Low/Middle Income Countries

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Purpose: Commercially distributed wound vacuums can be prohibitive in low/middle income countries (LMIC) secondary to single use components, supply chain limitations, and excessive cost. We aim to describe a novel technique for fabricating a negative pressure wound therapy device.

Methods: A low-expense, commercially available, 60 gallon/110 volt fish tank aerator was easily modified to reverse the flow of air (pull instead of push) (see figure). A plastic occlusive dressing or adhesive dressings were used to achieve a suction seal. Plastic tubing was used to connect the aerator to a cannister to drain and collect exudate.

Results: This "reverse aerator" was connected to a pressure gauge and was found to consistently draw about 100 mmHg. Plastic tubing and cannisters can be washed, sterilized, and re-used as indicated. By design, the aerator can be run continuously and can last years.

Conclusion: The "reverse aerator" device can be easily reproduced with minimal expense and waste while providing the predictable benefits of negative pressure wound therapy in clinically appropriate settings in LMIC.

