EVALUATION OF THE CIRCULAIRE II AEROSOL DRUG DELIVERY SYSTEMS FOR MICRO-BIOLOGICAL CONTAMINATION. Mark Grzeskowiak, RRT RCP FAARC. Respiratory Care Services; Barbara McKee, MT (ASCP), Microbiology Department, Long Beach Memorial Medical Center/Miller Children's Hospital, Long Beach, CA.

BACKGROUND: Small Volume Nebulizers (SVNs) are considered at risk for microbiological contamination due to their proximity to the patient's exhaled gas path and saliva. Routine use, post–treatment handling and storage practices may allow pathogens to proliferate to greater colony counts and inoculate the patient with contaminated aerosol during subsequent treatments. The Westmed Circulaire II (CII) and Circulaire II *Hybrid* (CII-H) are valved conserver type SVNs with two different types of aerosol reservoirs. Reservoirs substantially increase drug delivery but the condensation that forms inside them raises concerns about their potential for contamination. **PURPOSE**: This study was designed to determine if a valved conserver-type SVN with a reservoir would increase the potential for microbiological contamination. **METHOD**: Patients receiving at least 2 treatments daily had their CII and CII-H devices cultured at the end of each treatment day X 4 days. After each treatment, residual drug was poured out and the nebulizer stored in a plastic bag at the bedside. The nebulizer cup and reservoir was cultured using the BBL™ CultureSwab™ collection and transport system. Blood agar plates were inoculated with a specimen, streaked for isolation and incubated for 48 hrs. A semi-quantitative scale (rare, light, moderate or heavy) was planned to report any growth. Representative samples of each type of SVN were cultured prior to patient use to rule out contamination from the manufacturer. The study end-point was to collect 4 consecutive days of cultures (Cx's) from 10 patients each using CII and CII-H. Many patients remained on treatments for <4 days and thus had <4 cultures. **RESULTS**: Daily results are summarized in the table. Two cx's showed rare growth but cx's taken from those same nebulizers on a subsequent day showed no growth. Cultures from all other nebulizers and reservoirs showed no growth.

Circulaire II (CII) with 550 mL Thin Film Reservoir Bag								
	DAY 1		**DAY 2**		**DAY 3**		**DAY 4**	
# of Patients	33		20		13		10	
	NEB	**BAG**	**NEB**	**BAG**	**NEB**	**BAG**	**NEB**	**BAG**
# of Cx's	32	32	20	20	12	12	10	10
# of + Cx's	0	0	0	0	0	0	0	0
Circulaire II Hybrid (CII-H) with 350 mL Elastomeric Reservoir Ball								
# of Patients	29		13		11		10	
	NEB	**BALL**	**NEB**	**BALL**	**NEB**	**BALL**	**NEB**	**BALL**
# of Cx's	19	19	13	13	10	10	10	10
# of + Cx's	2 (rare)	0	0	0	0	1 (rare)	0	0

CONCLUSION: Despite using minimal post-treatment practices, in 252 cultures, no significant organism growth was found in either the nebulizer or reservoir of the Circulaire II devices. The rare growth found in 3 SVNs was considered insignificant. These findings suggest that the valved conserver device may isolate the nebulizer and reservoir and protect them from contamination.

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