

# Impact of HPV Decontamination on DRGNB rates in NICU Unit

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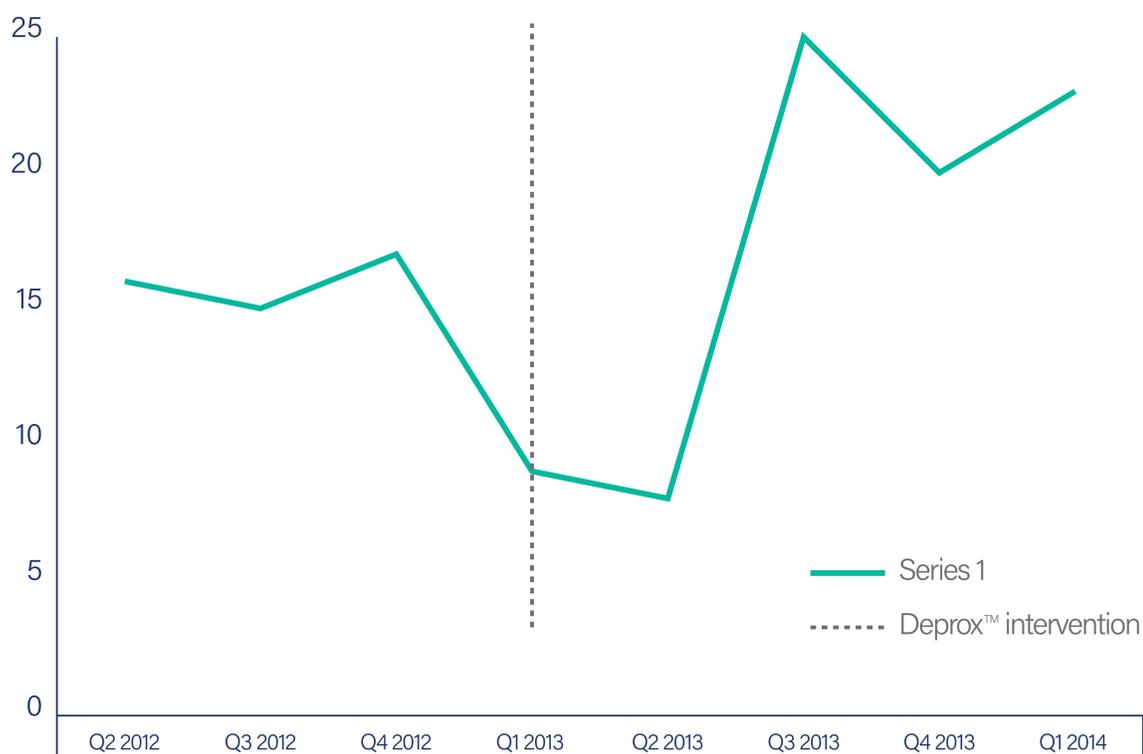
## BACKGROUND

Rates of infection with drug-resistant Gram-negative bacteria (DRGNB) are higher in NNUs than in other hospital settings; several NNUs close each year to control outbreaks with these bacteria. Gram-negative bacteria can survive for prolonged periods in the hospital environment, and we found that routine cleaning does not eliminate them from NNU surfaces.

## AIM(S)/OBJECTIVE(S)

**Primary objective:** To evaluate the use of H<sub>2</sub>O<sub>2</sub> vapour (HPV) decontamination to eliminate enteric bacteria from the NNU environment.

**Secondary objective:** To determine whether the use of HPV decontamination reduced acquisition of antibiotic-resistant Gram-negative bacteria (ARGNB) by babies.



## METHOD

We HPV decontaminated (Deprox™ Inivos King's Lynn, England) three NNU areas over two days: clinical bays (including cots and equipment), the breast milk expression room and an equipment store.

Environmental sampling was using polywipe swabs (Medical Wire & Equipment) twice before and six times after HPV.

All babies on the NICU have a weekly rectal swab to screen for the presence of ARGNB (gentamicin-resistance Enterobacteriaceae, ESBL-producing Enterobacteriaceae, Serratia spp., Pseudomonas aeruginosa, Acinetobacter baumannii). The numbers of babies acquiring one or more of these bacteria by quarter before and after HPV decontamination was monitored.

## RESULTS

9/13 (69.2%) samples in clinical bays grew enteric bacteria pre-HPV, compared with 3/69 (4.3%) post-HPV. 3/5 (60%) and 3/23 (13.0%) expression room samples were contaminated pre and post-HPV, as were 1/4 (25%) and 0/35 in the equipment store. HPV did not reduce environmental bacteria.

Enteric bacteria reappeared in the breast feeding room after 4 weeks; other areas remained free of enteric bacteria for 5 months. The reduction in enteric bacteria in the environment coincided closely with a reduction in the numbers of babies acquiring ARGNB.

## CONCLUSION

HPV eliminates enteric bacteria from surfaces in clinical areas, but is only practical where patients can be decanted. Our experience adds to the evidence that HPV decontamination can be used to assist in the terminal decontamination of rooms used to isolate MRGNB patients. However, our most interesting observation was that numbers of babies becoming colonised with ARGNB were reduced for at least 5 months following HPV decontamination. Although it cannot be concluded that this reduction was a direct effect of HPV decontamination, this finding merits further investigation of the routine use of HPV to control ARGNB in NICUs, and other high-risk hospital environments.

