

Session: EV023 Pharmacoepidemiology, improved prescribing and antibiotic stewardship

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**Inappropriate gentamicin prescribing: Is it safe to adopt combined use of aminoglycosides with narrow spectrum antibiotics to spare broader spectrum antibiotics?**

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**Background:** Increasing rates of resistance has led many clinicians to empirically treat patients with broad-spectrum antibiotics, potentially perpetuating the cycle of increasing resistance. Using narrower spectrum antibiotics in combination with aminoglycosides is increasingly being adopted by infection specialists to treat septic patients, thus sparing broader spectrum antibiotics. Aminoglycosides have a narrow therapeutic index and their appropriate use poses challenge to clinicians as they require careful consideration of multiple factors. Previous studies evaluating antibiotic use in hospitals have shown that up to 50% of prescriptions can be inappropriate (Zahar et al., 2006). The aim of this study is to assess the appropriateness of gentamicin prescribing at a large district Hospital in UK prior to the use of gentamicin combined with narrow spectrum antibiotics in treatment guidelines of common infections

**Material/methods:** Data on patients who had gentamicin therapeutic drug monitoring performed were sent daily to the investigator by the pharmacist. Regimen of gentamicin prescribed, dose, actual and corrected body weight, height, creatinine level, timing of monitoring, re-dosing and clinical indication were collected from the patients' medical and nursing notes and drug chart (gentamicin sticker). Investigator assessed the appropriateness of gentamicin use based on correct dosing, monitoring, re-dosing interval and documentation of creatinine level.

**Results:** Forty-six patients were included: 5mg/kg OD (n=39), stat 5mg/kg (n=7). Around 54.3% received a higher than expected dose and 19.6% received a lower than expected dose. Results showed that prescribers did not determine height or weight (28.2%); or used an out of date weight (46.2%). Patients who were not weighed received the wrong dose 82.7% of the time. Patients who required correction of their body weight (47.8%) received the wrong dose 100% of the time if that correction had not been documented; and received the correct dose 100% of the time if it was documented (6.5%). This was secondary to only 8.7% of patients having height documented. Criteria for minimum safe administration (correct dose, monitoring and re-dosing interval) were met in 10.3% (figure 1). All standards set were met by only 2.6% of prescriptions

**Conclusions:** Gentamicin was used exclusively in combination therapy to treat infections and prescribing was considerably substandard in the sample audited and potentially unsafe. Data collected suggests this was likely in part due to insufficient diligence in obtaining patient's weight and height and calculating corrected weight. Although monitoring methodology was pre-printed on stickers, incorrect monitoring intervals were used or levels were not checked versus Craig-Urban normogram. Further training and redesign of stickers is recommended prior to more widely incorporating gentamicin into narrow spectrum treatment approaches. Further studies investigating appropriateness of indication, culture results and duration of treatment are needed to ensure effective and safe use of Gentamicin.

