Abstract (poster session)

**Temporal, seasonal and geographical distribution of Cryptosporidium in Scottish waters**

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Objectives: The objective of this study was to employ molecular methods to gain an insight into the diversity of Cryptosporidium species in Scottish raw water (RW) and final water (FW). It would also provide further information on the geographical and seasonal occurrence of this parasite to assist in the management of potential outbreaks. Methods: 1042 Cryptosporidium microscopy positive samples were analysed in Scottish RW (43.8%) and FW (56.2%) over a 12 month period from nine regions in Scotland; North West (NW), North East (NE), North Central (NC), South West (SW), South East (SE), Central West (CW), South Central (SC), Central East (CE) and Central Central (CC). DNA was extracted from oocysts in slide preparations of water concentrates and amplified by PCR using two 18S rRNA gene loci followed by RFLP analysis and/or sequencing. Results: a) Human-associated Cryptosporidium species detected were; C. parvum (11.2% RW, 4.3% FW), C. hominis (1.5% RW, 1.3% FW) and C. ubiquitum (7.2% RW, 12.6% FW). b) Seasonal distribution; In RW, C. parvum was present throughout the year (except January and April) (frequencies ranging from 1.9% to 65.6%). C. hominis was present during August-November at low frequencies (2.4% to 7.1%). C. ubiquitum was identified every month except for December, (5.3% to 31.8%). In FW C. parvum was present except in March and July (frequencies of 6.2% to 30%). C. hominis occurred during Aug-Oct, (1.4% to 17%). C. ubiquitum was found all year (frequencies 10.5% to 57.1%). c) Geographical distribution; C. parvum was isolated in the NW and NE regions of Scotland (21.4% and 15.3% respectively) and in the CE region (17.1%) and CW region (20.6%). C. hominis was found less frequently in NW (6.5%), NE (6.1%), SC (2.1%) and CE (4.9%) regions. C. ubiquitum was detected in all regions but was more frequently found in the NW (45.9%) compared to NE (7%) region. Conclusions: 3 Cryptosporidium species associated with human disease were detected in both Scottish raw and final waters, namely C. parvum, C. hominis and C. ubiquitum. C. parvum frequencies were significantly higher in the summer in RW yet lower during a similar period in FW. C. hominis was only present in the summer and autumn whereas C. ubiquitum was detected throughout the year in RW and peaked in FW during autumn. C.parvum and C.hominis were localised to specific regions of Scotland whereas C.ubiquitum was found in all regions examined.