PNAEQ – Parasite Morphology
Performance evaluation of participants between 1995-2013

[1]Faria, A., [1]Correia, H., [1]Cardoso, A., [1] Brito, C., [2]Julio, C.

[1]Instituto Nacional de Saúde de Lisboa, Departamento de Epidemiologia, Programa Nacional de Avaliação Externa da Qualidade

[2] Instituto Nacional de Saúde Dr. Ricardo Jorge, Departamento de Doenças infecciosas, Laboratório Nacional de Referencia de Infeções Gastrointestinais

Introduction

PNAEQ (Programa Nacional de Avaliação Externa da Qualidade), has been implemented the Parasite morphology (blood and faeces) since 1995.
The collaboration of experts has been an asset in sample selection and result analysis aimed at continuous improvement of the performance of the participants. The program includes three annual distributions being sent at least one stool and one blood sample per distribution.

Aim

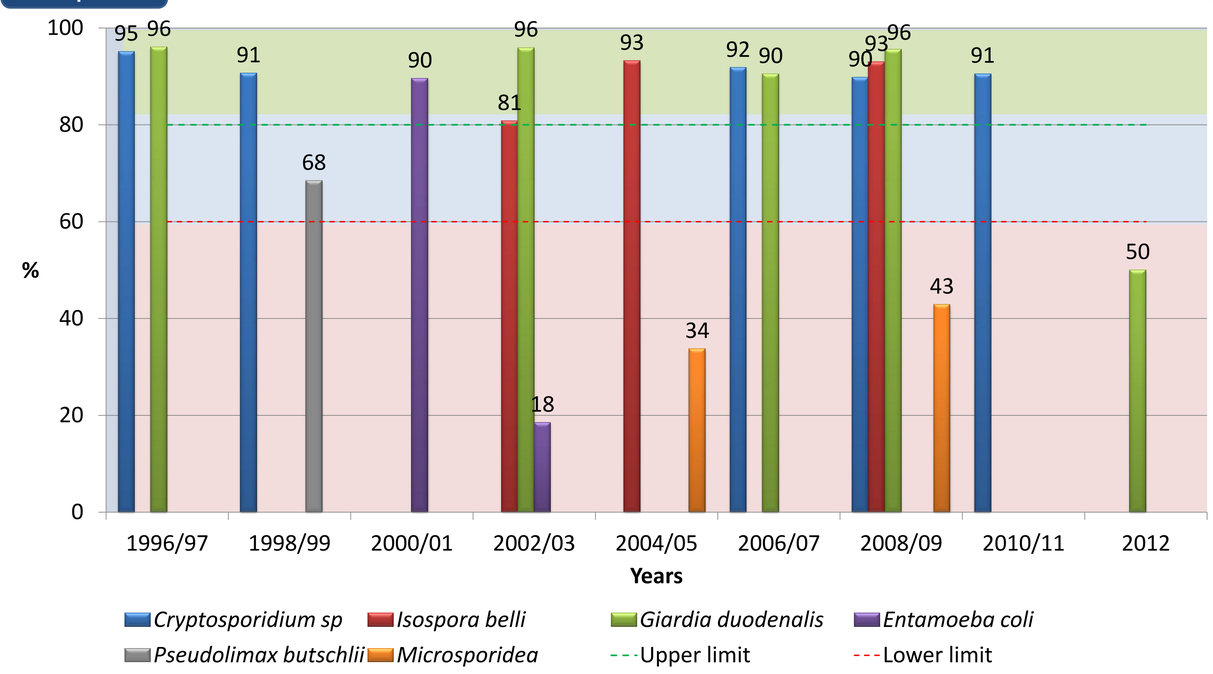
In this retrospective study, we intend to evaluate the participant performance since the beginning of the program until 2013, regarding the correct identification of faecal and blood parasites. The stages differentiation and quantification will be the subject of future analysis.

Material and Methods

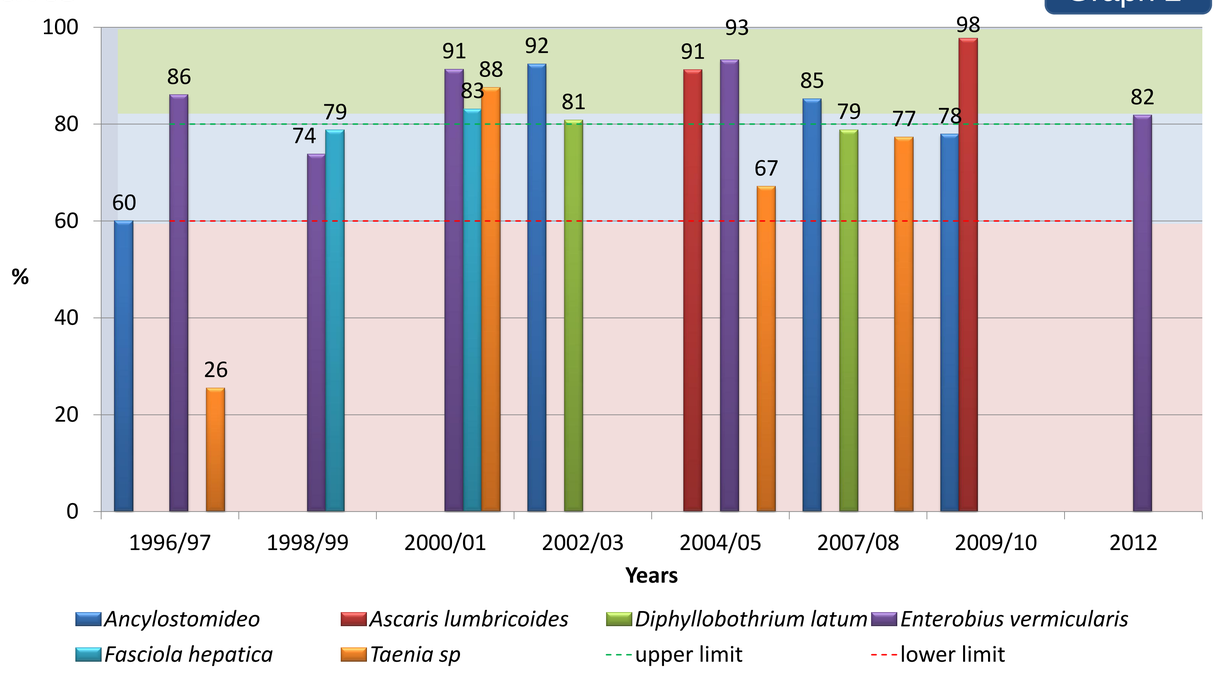
114 samples with protozoa and helminths in a total of 29 species were sent between 1995-2013. The qualitative statistical analysis of the identification of faecal and blood parasites was analysed taking into account the parasite present in the sample. A evaluation and feedback from PNAEQ experts, had always a formative character. The analysis of the participant's results, was accomplished considering the biological product and the number of parasites sent per sample.

Results

Graph 1

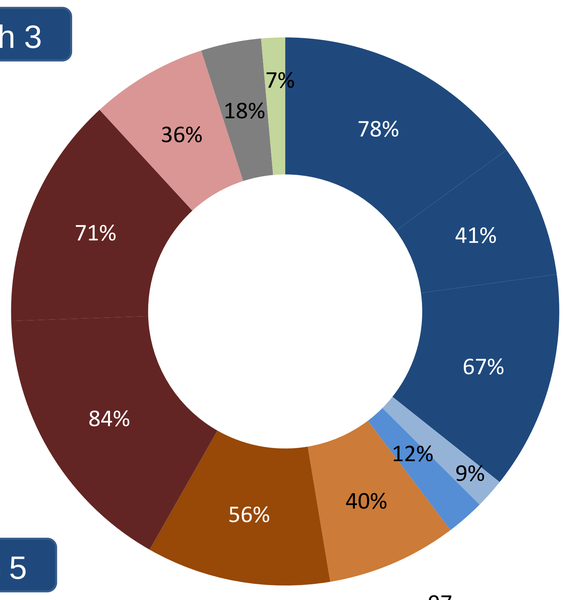


Graph 2



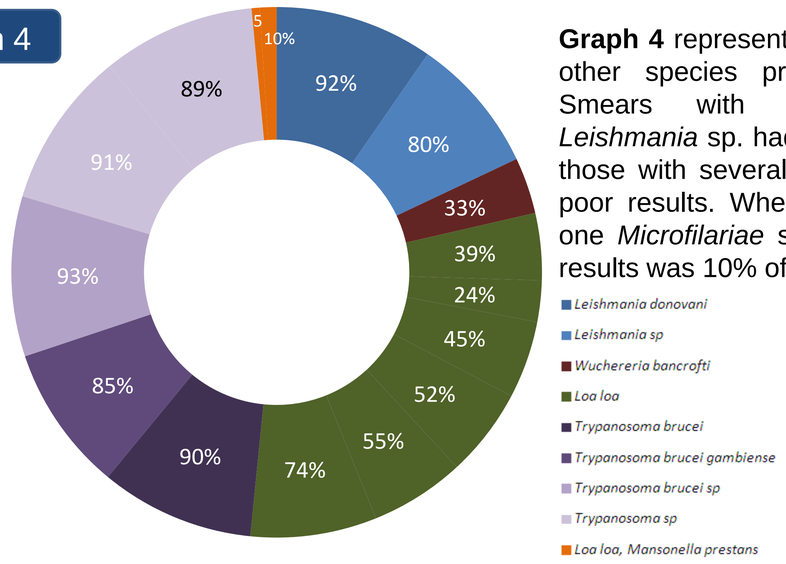
It was established the upper limit (above 80%) for good results and lower limit (below 60%) for not acceptable results. For the faeces samples the graphics show the percentage of correct results for Protozoa **(Graph 1)** and Helmiths **(Graph 2)**. 76% and 79% of the results were above the upper limit for Protozoa and Helminths, respectively.

Graph 3



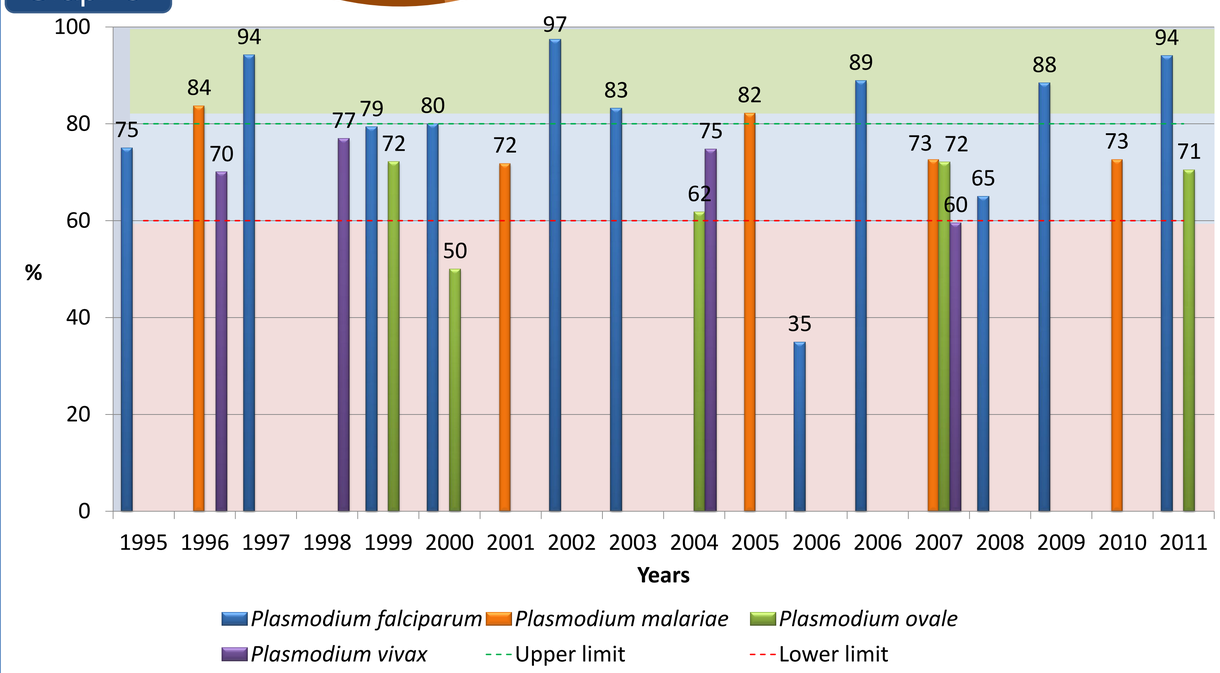
Samples with more than one parasite show that when the most common parasites are present (*A. lumbricoides* and *G. duodenalis*), the laboratory performance is better **(Graph 3)**. Samples with more than 3 protozoa are considered very difficult and with percentage of correct results very low.

Graph 4



Graph 4 represents the correct results for the other species present in blood samples. Smears with *Trypanosoma* sp. and *Leishmania* sp. had the best performance and those with several *Microfilariae* species had poor results. When samples with more than one *Microfilariae* species were sent the best results was 10% of correct results.

Graph 5



For blood samples with different species of *Plasmodium*, the graphic 5 shows the percentage of correct results. 36% were above the upper limit and 56% were above the lower limit (60%). For the samples with *P. falciparum*, only once was observed a poor laboratory performance. This was due to the sample containing young and mature trophozoites with a parasitemia of 3%.

Conclusion

😐 We observed a fluctuation in the performance of participants' results over the period being studied, and the performance of the participating laboratories in the identification of faecal parasites was higher in relation to blood parasites.

☺ We consider that the training investment of this program has been a great asset and should continue in the future to improve the performance of the participating laboratories.

☺ In the future, PNAEQ will invest in sending blood and faecal samples with more than one parasite to improve training of collaborators.