Mucositis and infection reduction with probiotics in children with cancer: a randomised-controlled feasibility study protocol

The MaCROS study

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Introduction: Studies have investigated the use of probiotics in people with cancer. A recent systematic review and meta-analysis identified a paucity of randomised-controlled trials (RCT) investigating the use probiotics to reduce or prevent mucositis and infection in children with cancer.

Figure 2: Forest plot of meta-analysis undertaken in the review demonstrating probiotics may reduce the incidence of diarrhoea in people with cancer

Figure 5: Flow summary of the MaCROS study

Methods: To undertake a randomised- controlled feasibility study with 20-40 participants aged 1 year or older, receiving chemotherapies likely to cause mucositis. Patients will be randomised to receive the probiotic VSL#3 or placebo on day 1 -14 of their chemotherapy. Patients, carers and healthcare professionals will be masked as to the allocation. Symptoms will be documented daily in a patient diary.

The study protocol, information leaflets and the patient diary were developed using input from patients, families and professionals (e.g. play specialists and dieticians) at each stage. A qualitative evaluation of the patients and families experience of participation in the study will also be undertaken.

Figure 3: Picture used in patient information leaflet for teenagers summarising probiotics

Figure 7: Picture used in the patient information leaflet for young children.

Results: Outcomes investigated will include analysis of the compliance of participants taking the probiotic on a daily basis and completion of patient diaries. Departmental referral and recruitment rates, numbers lost to follow up and evaluation of the participant/parent experience using telephone interviews will also be explored. Secondary outcomes investigated will include analysis of the incidence and severity of mucositis and infection, through the use of patient recorded diaries and review of clinical records.

Table 1: Table demonstrating ‘traffic light system’ to be used when evaluating if it is appropriate to undertake a RCT. Red: barriers, yellow: modification to protocol to be considered and green: no barriers to implementing protocol

Red	Yellow	Green
Unable to recruit 20 patients in 6 months	Less than 10 patients recruited within 3 months	No issues implementing protocol
Intentional deviation from study protocol	Poor identification of eligible patients	Adequate identification & recruitment of participants
	Problems with delivery of intervention/placebo	100% compliance with delivery of intervention/placebo
	Poor compliance with completion/return of diary	More than 80% compliance with completion/return of diary

Figure 6: Diary participants/responsible adults will fill in. Patients were approached to give feedback on the questions and design.

Conclusions: Findings of the completed study will be used to assess if it is feasible to undertake a RCT to investigate whether probiotics can reduce the incidence and severity of mucositis and infection in children with cancer.

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