Project title: Treatment options for arsenicosis patients: A Systematic Review and Meta-analysis

Background / rationale: Over 100 million, including approximately 36 million people in Bangladesh, are estimated to be chronically exposed to arsenic-contaminated drinking water. Chronic arsenic exposure through drinking water increases the risk of multiple health problems such as cancers of the skin, bladder, lung and liver, arsenicosis, stroke, ischaemic heart diseases. The risk of arsenic toxicity varies widely between individuals and populations. So far, no specific treatment has yet been proved to be effective in treating arsenicosis patients but provision of multivitamins (vitamin A,C,E), selenium or folic acid supplementation along with arsenic free water and various skin lotions have shown some improvement in the skins of arsenicosis patients (Ahmad et al., 1998; Ahmed, Manning, Wassenaar, Cawthraw, & Newell, 2002; Bates et al., 2004; Gamble et al., 2006; Verret et al., 2005). In the current context of the absence of any specific amelioration treatments, provision of arsenic-free safe drinking water remains the only viable intervention (Smith, Lingas, & Rahman, 2000). However, anti-oxidant vitamins have been used to treat arsenicosis patients. Furthermore, there have been several studies that have demonstrated the benefits of folic acid in treating arsenic toxicity (Gamble et al., 2006). We recently conducted a pilot randomised controlled trial that proved the effectiveness of aqueous garlic extract tablet in reducing arsenic toxicity.

Aim: The overall aim is to systematically identify and review treatment options for arsenicosis patients and critically appraise the effectiveness of these treatment options.

Objectives
1. Systematically identify relevant journal articles and grey literature on treatment options for arsenicosis
2. Critically appraise the findings from the selected literature
3. Conduct a meta-analysis to pool quantitative outcomes from the studies

Methods
1. Broad identification of the parameters of the systematic review, including population inclusion/exclusion and the nature of the interventions.
2. Develop a search strategy on the basis of the systematic review parameters.
3. Undertake the search in the following databases: Medline, EMBASE, Informit, Scopus, Global Health, CINAHL, Sociological Abstracts. Reference lists will be pearled to obtain addition resources. Searches for grey literature will use Google search and thesis databases.
4. Extract the data and information from studies on the basis of coding template.
5. Asses the qualities of the studies using a comprehensive quality scoring instrument
6. Conduct a statistical meta-analysis to pool the effect measured from all the relevant studies which would include sensitivity analysis, meta-regression, sub-group analysis, examination of publication bias etc based on the available studies (objective 3)

7. Write the report incorporating the reviews.
All the meta-analyses will be conducted using statistical package Stata 14.

*Note: the students will be able to access statistical package Stata 14 using myAccess on their personal computers as well as on mobile devices for analyses. If needed, the supervisor will be able to provide a copy of the software on their personal computer for the duration of the project.*

**Anticipated outcomes / significance (point form):** Develop a research report with recommendations for future research and public health practice or potential manuscript for publication.

**Timeframe:**
1. ILP research project over 32 weeks to achieve objectives 1 to 3.

ILP students will receive sufficient statistical support to conduct the analysis.

If you are interested in undertaking this special research project please contact Md Bayzidur Rahman, bayzid@unsw.edu.au

**References:**


