**PDSA Cycle 1**

**Aim:** what are you trying to accomplish?

Mafraq Hospital relies on the environmental service team to clean and disinfect the patient care environment. However, visual inspection does not ensure that adequate disinfection has taken place. The present study was undertaken to investigate both the thoroughness with which environment and patient care equipment were being cleaned and disinfected at our healthcare facility as well as our ability to systematically improve this process using a novel fluorescent marker evaluation system.

**Plan:** what will your test be?

The initial target locations selected will be post-natal unit (where post caesarian cases are admitted) and in operating theatres (OT).This evaluation will be piloted in these areas due to the increased trend of caesarian section surgical site infections (1.7 per 100 caesarian sections in January 2013 to 13.0 in February 2013). The fluorescent powder used for marking can be removed by wiping surface for 5 seconds with light pressure. The evaluation will be performed in patient rooms following discharge of patients and before being occupied by next patient. The high-touch surfaces or objects in patient rooms will be marked by secret auditor with fluorescent powder before cleaning. Following the cleaning and disinfection the target surfaces will be evaluated using a portable ultraviolet light to see if the mark had been wiped off.

**Prediction:** what do you think will happen as a result of your test?

Visual evidences and quantitative measurements will convince the need for a standardized cleaning and disinfection practice. Thus will enhance the quality of cleaning and disinfection practices in Mafraq Hospital, and thereby render the patient environment safe.

**Do:** what happened when you carried out your test?

When the system was initiated in February 2013, the cleaning and disinfection technique compliance rate was only 11% in 1st quarter 2013, after at least 30 high touch surfaces (e.g., door handle, alcohol-based hand dispenser, water faucet, overhead table, telephone keypad, etc.) were evaluated. The results were immediately communicated to the key stakeholders. Factors led to the non-compliance were analyzed and they were lack of supervision for cleaning procedure, no standardization in allocating time for cleaning procedure, knowledge deficit about the concentration and preparation of surface disinfectant, quick cleaning on demand during high turnover of patients, the same disposable cleaning cloth for clean and contaminated surfaces or equipment, elbow grease (manual friction) was not used during cleaning, equipment missed to be cleaned, staff shortage, frequent turnover of environmental personnel and lack of standardized mechanism to monitor the effectiveness of cleaning and disinfection practice.

**Study:** how did the results of your test compare with predictions?

During the course of study, a decline in compliance from 77.3% in quarter 3, 2013 to 50% in quarter 4, 2013 was observed. Lack of ongoing reinforcement and close supervision were identified as contributing factors.

**Act:** how will you change your previous test in light of what you have learned?

Reinforce on-going education for cleaning and disinfection technique (e.g. safety culture campaign, infection prevention and control committee and link practitioners meeting). Empower the link practitioners and environmental service team to closely monitor the practice in their respective areas. Senior management shall acknowledge the best performance and thus enhance the nursing unit managers to take the ownership. Scheduled evaluation will be performed by the infection preventionists and prompt feedback to the stake holders.

**PDSA Cycle 2**

**Aim:** what are you trying to accomplish?

Mafraq Hospital relies on the environmental service team to clean and disinfect the patient care environment. However, visual inspection does not ensure that adequate disinfection has taken place. The present study was undertaken to investigate both the thoroughness with which environment and patient care equipment were being cleaned and disinfected at our healthcare facility as well as our ability to systematically improve this process using a novel fluorescent marker evaluation system.

**Plan:** what will your test be?

Provide simulation session for cleaning and disinfection technique evaluation. Empower the link practitioners and environmental service team by involving them in evaluating the technique in their respective areas. Senior management shall acknowledge the best performance and thus enhance the nursing unit managers to take the ownership. Scheduled evaluation will be performed by the infection preventionists and prompt feedback to the stake holders.

**Prediction:** what do you think will happen as a result of your test?

Ongoing education through simulations and continued monitoring will help to improve and sustain the compliance.

**Do:** what happened when you carried out your test?

When the practices were reevaluated in 2nd quarter 2013, the cleaning and disinfection technique compliance had increased to 76.9%, after at least 30 high touch surfaces of environment and equipment were evaluated. The results were shared with the key stakeholders.

**Study:** how did the results of your test compare with predictions?

The cleaning and disinfection technique evaluation rates show more or less sustained compliance as health care workers are involved and empowered and are thus able to appreciate a standardized cleaning and disinfection process.

**Act:** how will you change your previous test in light of what you have learned?

Continue to empower and involve the stakeholders. Continue ongoing education. Continue scheduled evaluation by the infection preventionists and provide feedback to the stake holders. Continue to acknowledge the best performances. Fluorescent dye marker system will be rolled out to the whole Mafraq Hospital.