HAI-GHANA PROJECT
Healthcare Associated Infections Project, Ghana





HAI RESEARCH TEAM & HOSPITAL STAFF EXTRACTING DATA FROM PATIENT FOLDERS DURING POINT PREVALENCE SURVEY

The Healthcare Associated Infections (HAI) project is a 5-year research study with funding from DANIDA. The overarching objectives of the project are to reduce morbidity, mortality and costs related to healthcare associated infections in Ghana.

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Nationwide point prevalence survey of healthcare associated infections in Ghana

Background: The HAI Ghana project completed one of its key research activities in the first year by conducting a nationwide survey of healthcare associations; between 1 Sept 2016 through Jan 2017. Ten hospitals across Ghana were surveyed. They included 2 Teaching hospitals: Korle-Bu and Tamale; 4 Regional hospitals, Koforidua, Wa, Sunyani and St. Francis Xavier, and 4 District hospital: Tarkwa, Bawku, Battor Catholic and Agogo Presbyterian. **Findings:** An overall prevalence of 8.2% (172/2107) was identified among patients. Across the various hospitals, the prevalence values varied, ranging between 3.5 to 14.4%, with higher proportion of infections in secondary and tertiary care facilities. The most frequent HAIs were surgical site infections (32.6%), bloodstream infections (19.5%), urinary tract infections (18.5%), and respiratory tract infections (16.3%). Device-associated infections (excluding peripheral vascular catheters) accounted for 7.1% of HAIs. For 12.5% of HAIs, a microorganism was reported; the most isolated microorganism was *Escherichia coli*. Approximately 61% of the patients surveyed were on treatment with antibiotics. The strongest independent predictors for HAI were the presence of invasive device before onset of infection, and days spent in hospital before HAI survey. **Conclusions:** There is a considerable burden of HAIs observed among different levels of hospitals in Ghana, with high prevalence observed in secondary and tertiary care hospitals. This calls for the strengthening of national infection prevention and control programmes. **Further information:** A manuscript of the full study has been submitted for publication in the Journal of Hospital Infections.

infection and the commonest healthcare associated infection (HCAI) among

Surgical Site Infection and effect of Surgical Site Infection Surveillance systems in Ghana



Antoinette Bediako-Bowan (MD) (PhD candidate)

Background: Surgical site infections (SSI) are the third most reported surgical patients. It impacts on the clinical, financial and social aspects of a patient, from increased length of hospital stay, risk of morbidity and mortality and higher treatment costs.

Currently, there is a lack of data on the magnitude of the problem of SSI in sub-Saharan Africa including Ghana. In

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Ghana, available information on the subject is based on retrospective institutional studies, which tend to underestimate the problem. A prospectively conducted point prevalence study carried out 10 years ago in Ghana on HCAI, estimated surgical site infections to be 39.3%. The associated challenge with that study was that data was collected over only an 11 hour period and no clinical examinations of patients was done and may have underestimated the prevalence of SSI.

Surgical site infection has however become a key indicator for measuring the iterator performance of individual surgeons as well as various hospitals in addition to its surveillance as a measure of patient safety. Surveillance with feedback to surgeons is well recognized to be effective within an individual hospital in reducing rates of wound infection. Effectively instituted, surveillance of SSIs helps institutions device strategies to reduce or prevent them. Several surveillance systems have been described in the developed and some developing countries and these have helped reduce Surgical Site Infections in the various countries.

There are no surveillance systems for surgical site infections in hospitals in Ghana even though the Ministry of Health, recognizes healthcare associated infections as an important patient safety issue and in its final draft of the Ghana Health Sector Monitoring and Evaluation Framework, 2014, has selected Surgical Site Infections as a sector wide indicator for patient safety in Ghana.

Study aims and objectives: This study aims to describe the epidemiology of Surgical Site Infections in Ghana, including its prevalence and risk factors and to develop and implement an effective Surveillance system for Surgical Site Infections to subsequently help to reduce or prevent them.

The specific objectives are to determine the prevalence rate of surgical site infections in Ghana; to determine associated organisms and their drug susceptibility; to determine the factors associated with morbidity and mortality; and to development and pilot a surveillance system for Surgical Site Infections in Ghana.

An Ethnographic Study of Healthcare Associated Infections in Selected Health Facilities in Ghana



Gifty Sunkwa-Mills (MD) (PhD candidate)

Background: Health care–associated infections (HCAIs) persist as a major problem in healthcare systems worldwide, and the associated morbidity and mortality is often higher in developing countries. There is dearth of reliable data on HCAIs in developing countries, and many cases go unrecorded. Strategies to combat HCAIs are largely focused on increased prevention of transmission through promotion of infection prevention and control (IPC) practices. IPC promotion requires an approach that considers personal factors affecting attitudes, as well as institutional culture and leadership.

Aim: To assess practices, perceptions and conditions that influence the occurrence of HCAIs, and the uptake of infection control interventions of health care providers, patients and their relatives in selected health facilities in Ghana using ethnographic research approaches.

Methods: Ethnographic methods will be employed to explore perceptions of 'dirt' and 'cleanliness'; perspectives and practices of health workers, patients and caregivers on hygiene-related issues.

This study is part of a larger project on Healthcare-associated infections in Ghana and will cover a 19-month period comprising 3 phases: a baseline phase to study existing behavior patterns and intentions; an interventional phase where a multimodal IPC intervention will be implemented; a post interventional phase to study conditions that influence the normalization of the interventions. The study will be carried out at the Neonatal, Surgical and Maternity units of the Korle-Bu Teaching Hospital and the Eastern Regional Hospital, Koforidua.

Expected Outcome: This ethnographic study will explore the perceptions of healthcare workers, patients and caregivers on hygiene management in relation to HCAIs and observe compliance and techniques of IPC practices among healthcare workers before and after the implementation of a multimodal intervention program. Findings will guide the successful implementation and integration of future research interventions, and contribute to existing policies on infection control.

Neonatal Sepsis at neonatal intensive care units of two major referral hospitals in Ghana



Appiah-Korang Labi (MD) (PhD candidate)

Background: Neonatal sepsis is a major contributor to global under five mortality statistics. In developing countries a significant proportion of neonatal sepsis is thought to emanate from the healthcare setting, due to challenges in infection prevention and control practices. Curbing this problem requires an understanding of the disease epidemiology and transmission dynamics to guide the implementation of strategies aimed at improving infection prevention and control practices. **Aim:** To study the epidemiology of sepsis and evaluate the

effect of multimodal infection control interventions on the incidence of neonatal sepsis and multidrug resistant (MDR) Gram negative colonization. **Hypothesis:** In this study we are hypothesizing that the hospital environment serves as a source of multi-drug resistant Gram negative bacteria responsible for neonatal colonization and sepsis among patients admitted to the NICU; and increased infection control interventions will lead to reduction in the incidence of neonatal sepsis and colonization by MDR Gram negative bacteria. **Methods:** We will conduct a controlled before and after interventional trial comprising a 7 month pre-intervention phase, 5 month intervention phase and 7 months post-intervention phase. Neonates admitted at the Neonatal Intensive Care Unit (NICU) at Korle-Bu Teaching Hospital (KBTH) will be enrolled prospectively and followed up for diagnosis of sepsis and outcome of admissions. Signs and symptoms of neonatal sepsis as well as results from blood cultures will be collected to describe the epidemiology of neonatal sepsis. Swabs will be collected from a subpopulation of included neonates at intervention site (KBTH) and control site (37 Military Hospital) NICUs to assess colonization of neonates with MDR Gram Negative bacteria. Environmental swabs will be collected from incubators and surfaces at the NICU to assess Gram-negative contamination of the environment. Surveillance of neonatal sepsis will also be instituted over the lifespan of the study at both control and intervention sites. The interventions comprise infection prevention and control strategies including implementation of the WHO multimodal hand hygiene strategy. The primary endpoint is incidence of neonatal sepsis. Secondary outcome measures are the rate of Gram negative colonization of neonates and the environment. Data collected will be used in evaluating the impact of interventions on the primary and secondary outcomes. **Expected Outcome:** It is expected that findings from this study will contribute to improved infection prevention and control practices in the NICU. It will further highlight lessons that other national and sub-regional NICUs may learn from, and help to reduce the burden of hospital acquired infections (HAIs) in newborns.

Surveillance and effect of intervention strategies on puerperal infections



Christiana Akufo
(PhD Candidate)

Background: Worldwide research on puerperal infections is dominated by literature from developed countries due to paucity of data describing the infection from resource limited countries. There is therefore inadequate development of evidence based strategies to reduce morbidity and mortality associated with puerperal infections. **Aim:** This project aims to reduce the burden of puerperal infections through surveillance and infection control. **Methods:** Between July 2018 through June 2019, a prospective survey focusing on the incidence of puerperal infection; knowledge, attitudes and practices that predispose new mother to puerperal infections; and the effect of surveillance and evidence-based infection control interventions on puerperal infections will be conducted in 2 hospitals to generate data on the epidemiology of puerperal infections and socio-cultural barriers to infection control. **Expected outcome:** Findings from this study will contribute to improved infection prevention and control practices. The interventions are expected to reduce the burden of puerperal infections, and likely to result in cost savings, thereby allowing resources to be used for provision of other healthcare services.



HAI-Ghana project procures BACTEC FX40 for blood culture

The HAI-Ghana project has procured a state of the art blood culture system at a cost of about USD 20,000.00. The PhD students on the project will use this automated blood culture system. Importantly, this BACTEC machine is providing services for the NICU of the Korle-Bu Teaching Hospital. Specimens taken from children who require blood culture services are promptly processed and receive test results at the shortest possible time, at the cost of the HAI-Ghana project. It is envisaged that the necessary mechanisms and measures will be put in place for this machine to continue to serve the Paediatric Unit of the Korle-Bu Teaching Hospital.

The HAI-Ghana project also refurbished some laboratories at the Medical Microbiology Department, University of Ghana to facilitate the research work of the PhDs. The BACTEC machine is housed in one of the rooms refurbished.

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