In 2015, a quality improvement initiative commenced in health facilities implementing the Saving Lives @ Birth program which is aimed at improving maternal and child health outcomes. Baseline assessments were conducted in ten facilities using SafeCare Essentials tool and tailored quality improvement plans (QIP) were developed for each facility. Monthly facilitation visits were conducted to mentor facility quality teams on the implementation of activities in the quality improvement plans. However, distance and poor road network were limiting factors for routine monthly visits for QIP facilitation. A remote facilitation pilot using mobile technology was launched in August 2016. A study was also conducted to investigate the cost-effectiveness of this mode of facilitation, benefits and challenges.

Methods: Mobile internet penetration in Kwara was 66% in the first quarter of 2016 according to the National Bureau of Statistics and all facility quality leads had access to internet-enabled phones. With its extensive global penetration including Kwara and ease of use, WhatsApp mobile application was the technology of choice for the remote facilitation pilot in ten health facilities (four private and six public).

A generic quality improvement plan was developed for participating facilities. SafeCare Quality Managers moderated remote facilitation group sessions for 1 hour weekly. During sessions, facility quality managers were mentored on one or more activities in the generic quality improvement plan. Evidence of activities implemented were posted as pictures or documents on the group forum or shared via email. New QIP activities to be implemented were assigned at the end of each session. A log was also maintained by each facility and the moderator to track completion of QIP activities.

Results: The average time spent during on-site facilitation visits was estimated as 2.5 hours monthly and WhatsApp facilitation 4 hours monthly.

1. Efficiency improved in terms of manpower hours and fuel consumption. Over a six-month period, manpower hours lost commuting was estimated as 207 man hours. Comparing the time spent on facilitation of ten facilities; the average time for remote facilitation was 4 hours monthly while on-site facilitation was estimated as 150 man hours, thus saving additional 146 man hours. Using a fuel consumption rate of 7 litres/100 km for a Toyota Hilux, cost of fuel over a six-month period was estimated at 325 Euros. However, six-months internet data plan for the moderator cost 8 Euros only.

2. WhatsApp platform fostered cross learning and replication of best practices in quality improvement among health facilities.

3. Group sessions promoted competition between facility quality managers on completing QIP activities and better relations.

4. Relatively high quality scores at follow-up assessments ranging from 43% to 71%.

Conclusion: Remote facilitation using WhatsApp is a cost-effective facilitation tool to mentor facility quality teams on implementing QIP activities. Participating facilities had good results at follow-up assessments with quality scores ranging from 43% to 71%. Overall, remote facilitation through WhatsApp fostered peer to peer learning, replication of best practices, competition and better interactions among facility quality managers.

Objective: In order to make quality healthcare accessible to the unreached populations of Keylong and Kaza in the Himalayan state of Himachal Pradesh (HP), Apollo Telehealth Services (ATHS) has successfully set up the world’s highest altitude Telemedicine Centres at 13,500 feet and are seamlessly delivering the much needed emergency, specialty and primary tele-consultation services to this disadvantaged population.

Methods: Through Public Private Partnership (PPP) with the Govt. and deploying cost effective technology, ATHS has established Tele-Emergency and Tele-Specialty services. The ATHS team braved landslides, sub-zero temperatures and impossible road conditions. Helicopters were used to airlift the team and equipment. The limited medical resource team was trained at Apollo Hospitals, Chennai. Well-integrated Teleconsultation and Tele-emergency units at the Community Health Centers in Kaza and Keylong were set up, complete with remote diagnostic devices and seamless connectivity using satellite connections, to enable Tele-Health services with Apollo Hospitals at Chennai.

Results: In 2 years, the programme has delivered more than 5600 specialty consults and more than 450 emergency cases have been stabilized. Hundreds of ambulance trips and helicopter evacuations have been avoided.

Conclusion: This is the only high altitude telemedicine programme in India that is delivering specialised healthcare services to a remote population of 34,000. By using technology the initiative has reduced rural health practice isolation and enabled healthcare delivery in the
remotest parts. This has successfully bridged the difference between the haves and the have-nots in terms of healthcare and strengthened the healthcare system of the country.

**ISQUA17-3128**

**ASSESSMENT OF EARLY MORTALITY IN PATIENTS ADMITTED TO THE GENERAL MEDICAL WARD AT A DISTRICT HOSPITAL IN BOTSWANA**

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**Objectives:** Botswana has made significant gains in providing widespread access to medical care since its independence.1 However, measuring quality of care in the inpatient setting has not been a focus of public health efforts. Based on a prior study at our district hospital in Botswana2 as well as our clinical experience, early mortality is common among patients admitted to the adult medical wards. We aimed to quantify and examine cases of patients who died within 48 hours of admission in order to identify opportunities for intervention that might reduce preventable early in-hospital mortality.

**Methods:** Retrospective chart review was performed on all patients who died within 48 hours of hospital admission to the general adult medical wards of Scottish Livingstone Hospital (SLH), the secondary referral center for Kweneng East district, Botswana, from December 2015 through April 2016. Root cause analysis (RCA) on each case was performed by two independent investigators using a template for RCA based on the Vincent Framework3 adapted to the Botswana setting. Summaries, including presenting signs and symptoms, probable causes of death, care management problems, contributory factors and the likelihood of preventability of death were assembled for each case.

**Results:** Of 514 admissions during the study period (December 2015-April 2016), 31 patients (6%) died within 48 hours of admission to the adult general medicine wards. Respiratory distress was the most common presentation (74% of cases), followed by encephalopathy (63%) and hypotension (41%). Septic shock was identified as the probable cause of death in 74% of cases. A delay in antibiotics, inappropriate fluid management, and breakdown in communication between care providers were the most frequent care management issues, all present in 56% of cases. A lack of knowledge and skills among providers was associated with these care management issues in 93% of cases. Of the 27 deaths, we estimated that 5 deaths (18%) were either likely or very likely preventable, and 11 deaths (41%) were either unlikely or very unlikely preventable. The preventability of 11 deaths (41%) was uncertain. We identified associated care management issues that are now being used to create a quality improvement intervention at SLH targeting the early identification and management of sepsis in an effort to reduce preventable early mortality among hospitalized patients.

**References**


**ISQUA17-3166**

**IMPROVING EFFICIENCY IN HEMATOLOGY LABORATORY**

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**Objectives:** It was observed since past one to two years that growth in section of Hematology of Clinical Lab was hampered for new and specialized tests. Improvement in report turnaround time is restricted to 24 hrs. for Complete Blood Count (CBC) test which is affecting about 4000 patients per month. In order to improve customer service, there was a need of an innovative approach. In this scenario, the objective or the goal of the project arises as:

> “Improving efficiency in section of Hematology through reducing turnaround time from 24 hrs. to 12hrs for all Complete Blood Count (CBC) samples received by November 2014.”

**Methods:** Methodology used was Lean Six Sigma Roadmap which includes following:

Define, Measure, Analyze, Improve, Control (DMAIC)

**Results:** Reporting of CBC results reduced from 24–12 hrs. with report completion rate of about 99%.

With the induction of barcoding and automation:

- The average sample analysis time was reduced from 1.3 minutes/sample to 0.64 minutes/sample
- The average rate of slide preparation per sample was reduced from 1.24 slides/sample to 0.34 slides/sample
- Slide rejection and re-staining is significantly reduced by factor of 1/6th

New process has completely eliminated the requirement of print out with the provision of abnormal results flagging. Hence annual saving of 0.2 Million Rupees and saving of 31 labor hours/month by avoiding unnecessary printout.

**Conclusion:** This was a Lean Six Sigma Green Belt Project which utilizes the methodology of DMAIC (Define, Measure, Analyze, Improve & Control). This methodology proved to be very useful in