Improve Hand Hygiene, Achieve Zero Harm

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Background

Healthcare acquired infections (HAI), are often caused by the transmission of pathogenic organisms from one patient to another via healthcare workers' hands. Proper and effective hand hygiene, therefore, is one of the most important measures in preventing HAI.

In early 2016, the KKH Infection Control Unit reported that the hand hygiene compliance rate for KKH Allied Health Professionals (AHP) was 79.2% for year 2015, which fell short of the overall hospital target of 80%. The target was raised to 95% for year 2016. Hence, we need to improve the AHP's compliance rate.

The Department of Pathology and Laboratory Medicine (DPLM) went ahead to explore ways to achieve higher compliance rate. The focus was on the 3 main groups of phlebotomy staff that perform blood collection services. Each group has different types of workflows according to the location, type of patients and procedures (Table 1). With a combined annual workload of about 28,000 patients (at least 45% are newborns), therefore, it is critical for our phlebotomy staff to perform proper and effective hand hygiene to ensure patient safety and high quality patient care.

DPLM Phlebotomy Staff	Location	Patient Type	Procedure
Neonatal Expanded Newborn Screening Laboratory Inborn Errors of Metabolism Screeners	Wards DPLM Phlebotomy Room	Neonates	Heel prick
Laboratory Reception Medical Lab Technologist Lab Assistant	Wards DPLM Phlebotomy Room	Neonates Infants , Children Adolescents, Adults	Finger prick Heel prick Venipuncture
DPLM Phlebotomy Service Medical Lab Technologist Medical Lab Scientist	Pre-Admission Services DPLM Phlebotomy Room	Adults	Finger prick Venipuncture

Table 1: Groups of DPLM Phlebotomy Staff

Problem

As hand hygiene compliance rate was not available for individual department, therefore, establishing DPLM baseline data became an important task. Representatives from DPLM Phlebotomy Service, Inborn Errors of Metabolism (IEM) Screeners, Laboratory Reception, Laboratory Safety and the KKH Infection Control Unit were invited to form the project team. Three project team members were trained by KKH Infection Control Unit to be qualified internal hand hygiene auditors.

We used the direct observation method to observe staff compliance based on WHO "5 Moments of Hand Hygiene". All auditors were aware of the 'Hawthorne effect' (the alteration of behaviour by individuals due to their awareness of being observed) and were discreet in their observations. A run chart was plotted using the data collected (Figure A).

The run chart showed there was inconsistency in the hand hygiene practice amongst DPLM phlebotomy staff, and the overall compliance rate was only 73.3%.

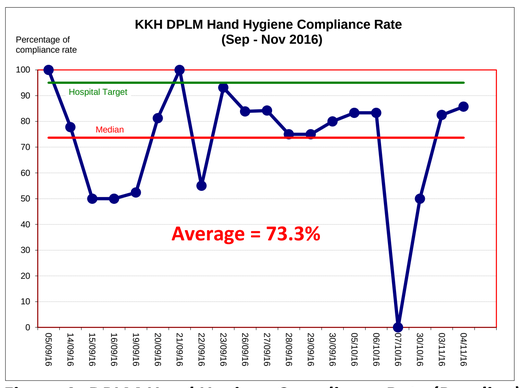


Figure A: DPLM Hand Hygiene Compliance Rate (Baseline)

Aim

The SMART principles were used to define the project scope and to set targets (Table 2):

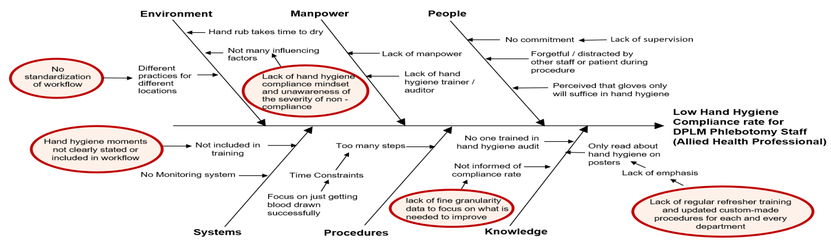
S	**Specific**	To improve hand hygiene compliance rate of DPLM phlebotomy staff.
M	**Measurable**	To achieve 100% hand hygiene compliance rate.
A	**Attainable**	Improve current workflow by streamlining the work processes.
R	**Relevant**	Align with KKH's Quality Priorities: (1)Safety (2)Professionalism (3)Respect (4)Experience (5)Efficiency
T	**Time-bound**	To complete the project within 6 months.

Table 2: Target Setting by Using SMART

Methodology

The possible root causes of inconsistent hand hygiene practice for DPLM phlebotomy staff were identified by using Fishbone Diagram (Figure B). With the use of Tree Diagram (Figure C) and Prioritization Matrix (Figure D), the team had decided to work on an improved and streamlined workflow that incorporated hand hygiene steps, which comply with infection control protocols.

Figure B: Fishbone Diagram



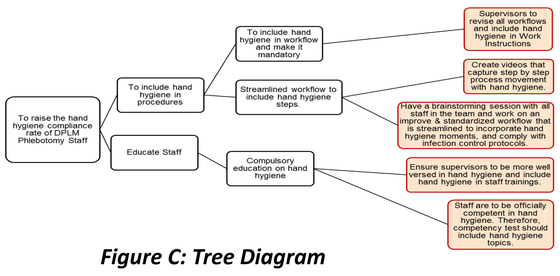


Figure C: Tree Diagram

Possible Solutions	Save Time	Effective	Easy to implement	Sustainable
Supervisors to revise all workflows and include hand hygiene in Work Instructions.	◇	◇	☆	☆
Create videos that capture step by step process movement with hand hygiene.	◇	☆	○	○
Have a brainstorming session with all staff in the team and work on an improved & standardized workflow that is streamlined to incorporate hand hygiene moments, and comply with infection control protocols.	★	★	★	★
Sections supervisors to be more well versed in hand hygiene and include hand hygiene in staff trainings.	○	☆	○	◇
Staff are to be officially competent in hand hygiene. Therefore, competency test should include hand hygiene.	○	☆	○	◇

Keys: ★ Meet Criteria Most ○ Meet Criteria Moderately ◇ Meet Criteria Least

Figure D: Prioritization Matrix

Our Solution

Step 1: Developed step-by-step flow chart based on current workflow for better visibility (Figure E).
Step 2: Identified all the required hand hygiene moments from the step-by-step flow chart.
Step 3: Analyzed and streamlined workflow to ensure better hand hygiene compliance.
Step 4: Revised the flowchart and made it a standard workflow (Figure F).

Key differentiation of the revised workflow: the new workflow is now clearer, easy to follow and eliminate possible confusion on the hand hygiene moments.

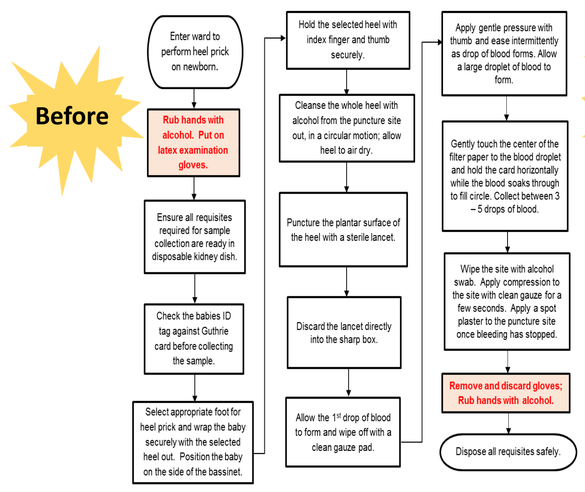


Figure E: Current workflow

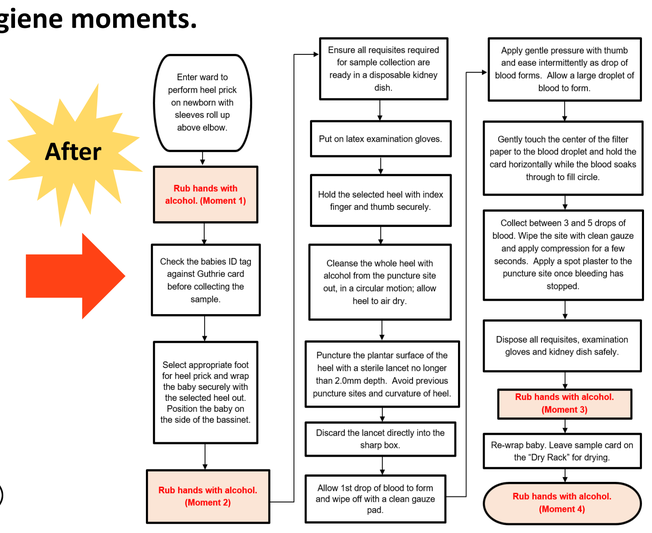


Figure F: New workflow

Results

We did a pilot on IEM screeners to test the effectiveness of the selected solution. Re-training were provided and all IEM screeners are required to follow strictly to the new workflow. Pilot run showed substantial improvement on hand hygiene compliance rate from 79.9% to 100% within 2 months for IEM screeners (Figure G).

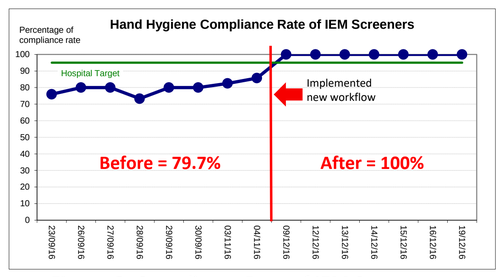


Figure G: Compliance Rate of IEM Screeners

Spreading

Upon the initial positive feedback from IEM screeners, the solution was later rolled out to the other 2 groups. We observed similar improvement for both groups which validated the effectiveness of the solution (Figure H & I):

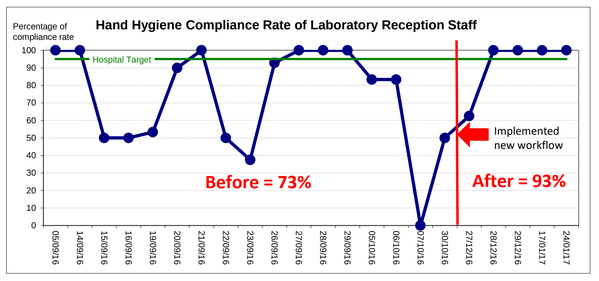


Figure H: Compliance Rate of Lab Reception Staff

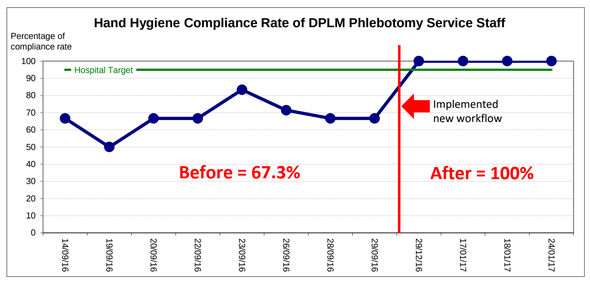


Figure I: Compliance Rate of DPLM Phlebotomy Service Staff

Sustainability

- The final solution has clear and detailed hand hygiene moments, hence, it is very systematic and easier for staff to follow. This reduces the resistance and encourage compliance.
- Incorporated new workflows into the revised Policy and Procedure documents and make it compulsory to comply.
- Generated greater awareness due to staff participation and strong support from management.
- Management decided to conduct internal hand hygiene audit on regular basis which put soft pressure to encourage better compliance and long term sustainability.

Project Achievement

Aligned with KKH's Quality Priorities:

Quality Priorities	Achievement
Safety	Department hand hygiene compliance rate is improved from 73.3% to 97.7%.
Professionalism	The improved standardised workflow enable performance consistency and create a better and professional image for our department.
Respect	Patient perceive that their safety is treated with utmost importance.
Experience	Consistence and professional service performance create a better customer experience and higher patient satisfaction.
Efficiency	Revised workflow minimise unnecessary confusion and error which increase productivity and efficiency.

Conclusion

This project helped us to understand the gaps in our current workflow. We believe the final solution with better clarity and detailed step by step guidelines on hand hygiene moments within the existing workflows, is one of the critical success factors for the hand hygiene compliance improvement.

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