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## Infection Control through History

Medieval Era (5<sup>th</sup> to 15<sup>th</sup> centuries). Bubonic plague killed about one-third of all people in Europe. In the 16<sup>th</sup> century, public health laws started to appear. In addition to plague, epidemics of smallpox, influenza, dysentery and typhus were common. The first European hospitals (spittle houses) were established in the 12<sup>th</sup> century. These houses were outside of city walls, and had large burial grounds. Hospitals were hazardous places. In the 19<sup>th</sup> century Infection Control Committees were developed. Main concern: vermin in beds, hospital stench, surgical site infections, policy for corpse removal. In 1500-1800, yellow fever, smallpox, measles with massive outbreaks of cholera. Surgery was still deadly. During the Crimean War, Florence Nightingale started the process by calling the Sanitary Commission. Which led to a reduction in the death rates. Moving on to WWII era; public health efforts increased. TB, diphtheria, measles, puerperal sepsis declined with the release of antibiotics. In 1946 the CDC was founded, evolving out of the office of Malaria Control. In the mid 1980's CDC initiated the National Nosocomial Infections Surveillance system to provide a mechanism for reporting HAI's are still a concern today.

The purpose of this study is a two fold. First the researchers performed a systematic literature review and secondly an observational study of hand hygiene compliance was conducted using an audit tool on all health care personnel (HCP) working on units in a community hospital. HCP were observed by auditors during rounds and here unaware that hand hygiene was under observation.



Bar chart showing the percentage of respondents who performed hand hygiene correctly (if soap/water used, washed for 20 seconds; OR if antimicrobial rub used, rubbed until dry) for January 2017, February 2017, March 2017, and Total. The Y-axis ranges from 0.0% to 120.0%.

| Month           | Hand hygiene performed (%) | Total (%) |
|-----------------|----------------------------|-----------|
| January - 2017  | ~92%                       | ~95%      |
| February - 2017 | ~81%                       | ~81%      |
| March - 2017    | ~87%                       | ~93%      |
| Total           | ~87%                       | ~90%      |

Audits were performed during day shifts only  
Same sample size



| Author/Journal  | Purpose   | Design  | Outcome   | Implication for Practice   |
|---|---|---|---|--|
| Kantele, A., Kanerva, M., Seppanen, M., Sutinen, J., Skogberg, K., et al., (2010) American Journal of Infection Control | To assess conference participants' hand hygiene compliance after toilet use   | Observational Study of 1474 participants at an International Congress on Antimicrobial Agents   | Males proved less compliant than females (38% vs 84%).  | Worldwide hands are washed with soap on only about 5% of key occasions.<br>Strongly encourage healthcare professionals to improve the hand hygiene   |
| Pollock, M., Skinkins, L., Perencevich, et al., (2015). American Journal of Infection Control                           | Examine self-reported adherence to hand hygiene                               | 127 participants completed the online survey conducted at Iowa Hospitals and clinics  | Medical students reported washing hands less frequently than others. Practices that occurred <90% included: after touching a patient, before handling meds, after removing gloves | Data suggested that students and interns are less likely to wash their hands if their faculty physicians do not wash their hands. In a training site that depends on role modeling, it is essential to remember their impact |
| Taylor, R. (2015). American Journal of Infection Control  | The role of message strategy in improving hand hygiene compliance rates       | 86 health care workers evaluated the strategies on patient care of understanding, believability and if the message lead to increase hand washing. | A routing approach is needed. Such as bottling messages in patient care areas, posters, additional hand washing stations. Educational material                                    | Strategies are needed to communicate to healthcare professional, patients, visitors, volunteers to decrease barriers. The goal to improve hand hygiene and decrease HAIs.  |
| Watson, J. (2016). American Journal of Infection Control  | Role of a multimodal educational strategy on health care workers' handwashing | 46 participants enrolled. A simple interrupted time series methodology at baseline and 3 months was used to monitor hand hygiene compliance       | The highest performing group both pre and post was the others HP (64-100%). RN's were second (49-99%). Physicians were the lowest (38-97%).                                       | The post hand hygiene observation were done during high influenza season. It is possible staff were being more vigilant about hand hygiene because of the increased flu cases.   |



- Lack of role modeling
- Lack of sinks in patient care areas
- Lack of social message strategy to communication programs promoting hand hygiene.
- Lack of knowledge; the need to hum
- Happy Birthday twice(time factor).
- Dispensers not in convenient locations
- Empty product dispensers, product drying out hands. Perception of hand hygiene not being needed for the task.



Handwashing with soap is recognized as one of the most important means of reducing spread of infectious organisms, and is a cost effective way to prevent and decrease infection rates. Our results demonstrated the need for increase knowledge for all health care professionals on hand washing, and the use of product dispensers. In this healthcare system all product dispensers were changed over to one single product and locations changed to meet the demands of healthcare professionals. Another study to see if this change increased hand washing compliance and decreased infection rates should be completed.

