Procedures of Hygiene Services and protection of the hospital environment

Nora BINISHI – DUSHI

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I must mention that special gratitude goes to my late father Prof Dr. Riza Binishi to whom I dedicate this Capstone project. The tragic end of his life should serve as a lesson for generations to come that unprotected hospital environments and low-standard infection prevention systems can lead to loss of lives of our beloved ones. As a tenet of academic developments in the field of healthcare, my father dedicated his life to improving hospital standards but unfortunately was a victim of a rotten and unattended system. My precious father was a hero in peace and war where he dedicated his expertise to saving human lives. With this thesis I commit myself to continuing his journey unconditionally regardless of the price invoiced.
## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>ABHR</td>
<td>Alcoholic Based Hand Rub</td>
</tr>
<tr>
<td>CDC</td>
<td>Center for Disease and Control</td>
</tr>
<tr>
<td>CICU</td>
<td>Central Intensive Care Unit</td>
</tr>
<tr>
<td>EVS</td>
<td>Environmental Services</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GoK</td>
<td>Government of Kosova</td>
</tr>
<tr>
<td>HCAI</td>
<td>Health Care Associated Infections</td>
</tr>
<tr>
<td>HCWs</td>
<td>Healthcare workers</td>
</tr>
<tr>
<td>IC</td>
<td>Infection Control</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>JCAHO</td>
<td>Joint Commission on Accreditation of Healthcare Organizations</td>
</tr>
<tr>
<td>KB</td>
<td>Kosovo Budget</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MTI</td>
<td>Ministry of Trade and Industry</td>
</tr>
<tr>
<td>Oth</td>
<td>Operation Theatre</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipments</td>
</tr>
<tr>
<td>UCCK</td>
<td>University Clinical Center of Kosovo</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
Executive Summary

Hospital’s infections are the best indicator of the quality of health services in a society. Kosovo and Albania are heading in Europe by their high infection rates of 17% and 19% respectively, while in the European Union infection rates are around 7% and in USA 7.5%. The healthcare system of Kosovo is one of the most sensitive and problematic areas. Despite investments in the renovation of facilities, their problems have remained the same. A hospital that appears dirty, untidy and uncared may lead patients to believe that the care it offers is also poor.

This capstone project addressed the problem of Environmental Services (EVS) in Kosovo’s hospital facilities. EVS related risks directly affect patients’ health as well as length of stay and increase of health expenditures. Surveys conducted via e-mail and face to face provided data from 100 health care workers (HCWs) (i.e. physicians, nurses, technicians) and 100 visitors and patients that were admitted at the University Clinical Center of Kosovo (UCCK). The UCCK is the only tertiary health care institution situated in the capital city Prishtina. The survey from this capstone project showed that only 4% of those surveyed were satisfied with the offered services in terms of housekeeping engagement, waste removal and equipment. Results from this project show that 50% to 79% were not satisfied with the services including cleanliness of internal spaces such as patient rooms, toilets, and hallways. (see figure below for more details)

This capstone project highlights that the EVS process within the hospital facilities is affected by two major points: 1) Control and inadequacy of the budget from the Government of Kosova (GoK) for the Ministry of Health (MoH), and 2) Hiring of professional maintenance companies to conduct EVS in hospitals. Out of 100 interviewees 20% of them strongly agree on increasing the budget, because they believe these services will improve. Moreover 75% of the same interviewees agree with the same claim whereas 3% are neutral and 2% of the respondents disagree.
As far as respondents’ recommendations are concerned, 51% claim to strongly agree and 37% agree that if hospitals used certified disinfectants their premises would be much cleaner and dramatically reduce the infection rates (see figure below).

Recommendations of HCWs

Recommendations from the capstone project show that EVS should be understood as a highly valued service offered to the patients and not as a common service or a cosmetic one. The main outcome from the capstone project was to highlight the progress and the challenges of EVS as a part of the healthcare reform in Kosovo’s hospitals.

Main areas of recommendations:

- **Compile a strategy plan for functioning of EVS at UCCK.** This includes: strategies for EVS infrastructure, staff and training, equipment, and supply with disposal material. The Strategy Plan for UCCK will determine development of each sector within UCCK particularly, since these are not specified in Sector Strategy 2010-2014 of MoH.

- **Increase of building capacities of hospital EVS related facilities.** This includes: creating waiting area for visitors in order to avoid mixing them with medical staff and prevent cross contamination and change the design of sanitary spaces.

- **Engagement of professional EVS companies and management staff.** This includes professionally companies and managers who don’t necessarily need to have medical background, but rather professional managerial skills.

- **Increase of budget for EVS at UCCK.** This includes advancement of attention on EVS in terms of budget allocation. It is obvious that 953,643,87€ is insufficient for proper performande of these services, but increase to 1,360,150€ would improve poor hygienic maintenance in UCCK.
CHAPTER ONE - General overview of Kosovo’s health care situation

This chapter discusses Kosovo’s health care situation through the past years. Also the chapter discusses specific events and indicators that characterize this situation in the healthcare sector. The chapter continuous to discuss and interrogate Kosovo’s healthcare facilities while asking specific questions with regard to hospital facilities in general and UCCK in particular.

1.1 Healthcare in Kosovo throughout years

At the end of the last century, when Kosovo was part of the Socialist Federal Republic of Yugoslavia, the possibilities to develop its health care system facilities were minimal. Poor economic growth, continuous struggle with reforms and an apartheid regime during the 90’s brought deep destabilization of the situation, thus the healthcare quality declined enormously. However, the establishment of the Faculty of Medicine at the University of Prishtina in 17th of June 1969[1], offered some advancement. Also the foundation of different clinics within faculty, created conditions for advancement for health professionals as physicians, technicians, nurses.

During the second part of the last century, Kosovo had the socialist healthcare system which continuous in today’s public health sector. After the war 1999, transition from old to modern concepts of the healthcare management presented a challenge to both healthcare staff and the population. From the discrimination that continued for years in health care dominated by Serbs, Kosovo Albanian doctors lacked practical professional experience. According to international standards, the possibilities of using the new treatment’s methods of general knowledge were low, and all these due to violent measures installed by Serbs in all Kosovo health institutions. In 1989 and early 1990s, the Serbian Government dismissed approximately 2,400–2,500 employees within the health sector which responded to these developments by forming parallel institutions and structures. During that period, the majority Albanian population used to avoid public health care institutions due to intimidation from Serbian medical personnel.

The World Health Organization (WHO) has been engaged in Kosovo since 1998 and promoted health care policies and planning. The international community made efforts to reduce the gaps that cause interruption by total dismissal of Albanian medical personnel. To create a balance due to this lack in order to please the expectations, after the war, the engagement of Albanian medical personnel began, but mostly private and family relation on this matter prevailed. On the other hand, after a decade without investment regarding maintenance and renovations, buildings’ infrastructure were outdated and profoundly exhausted. With the support of international assistance and funds, which were made available by the Provisional Institutions for Self-Government (PISG), many primary health care centres, hospitals, and other specialized health facilities were renovated.

[1] Statute of University Clinical Center, August 2007
A month after the war of 1999 with an assistance of WHO and international experts, the first “Healthcare Strategy of Kosovo” was drafted and approved on September 1999 by Department of Health and Social Wealth-fare. Aim of this strategy was to attract foreign investment in our homeland. After the comprehensive consultations Ministry of Health (MoH) published the document named “Healthcare Strategy of Kosovo” [2] (known as Yellow Book) which emphasize these reforms:

- Initiate the establishment of the Family Medicine as a strong point of primary healthcare
- Reconstruction of the second healthcare in 5 (five) regional hospitals
- Insure a proper management in healthcare institutions
- Continues education of the medical personnel

Following the Declaration of Independence on 17 February 2008, Kosovo continued to face major political, economic and social challenges. The current transition period is crucial for the development of democratic values, rule of law and a functioning market economy. On this crossroad, a clear strategy and statement of intent by the international community is required more than ever. Also during this period, the economy has developed through increasing a number of local enterprises assisted by donors support.

Regarding the health care in Kosovo, access to public health care is free and open to all citizens of Kosovo. Public health is financed by Kosovo Budget, which allocates approximately 7% to the public health. However without economic development, the Kosovo’s Budget is not likely to grow enough in the near future.

### 1.2 Key indicators

To have a genuine healthcare system, the functioning of the main pillars need to provide the patient with effective healthcare services as well as healthcare workers (HCWs) need to simultaneously be satisfied with their work. In most cases, in public health sector in Kosovo there is neither one nor the other. Patients from hospitals seem dissatisfied with the services they receive, until HCWs belong to the category that continuously protest due to the unsatisfactory working conditions including low salaries and no financial reimbursement for night shifts and on- call duties. On the other hand most of the medications that are in the market were not recorded, whereas citizens need to decide whether to purchase a legal product or an illegal one.

Based on last census conducted on April 2011, Kosovo had a population of 1,733,872 inhabitants [3] and the demographic structure is between the age 0-25 years is 51.62%. In the end of last century Kosovo has had a turbulent history, which continually affected the health care system. Kosovo’s development is measured by gross domestic product (GDP) which has been favorable during the past years. Despite the international finance crisis Kosovo

[3] Kosovo Agency of Statistic
experienced positive economic growth in June 2009. Moreover Kosovo joined the World Bank and the International Monetary Fund with the expectation that these two admissions would lead to other landings in respected organizations that will help the European newest state to further increase economic development. The main macroeconomic indicators that affects economic development in Kosovo were shown in table 1.1.

Table 1.1: Main macroeconomic indicators

<table>
<thead>
<tr>
<th>Description</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (a) %</td>
<td>3.9</td>
<td>4.0</td>
<td>4.0</td>
<td>5.4</td>
<td>4.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Inflation (a) %</td>
<td>1.4</td>
<td>0.6</td>
<td>4.4</td>
<td>9.4</td>
<td>-2.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Unemployment (a) %</td>
<td>41.4</td>
<td>44.9</td>
<td>43.6</td>
<td>47.5</td>
<td>45.4</td>
<td>45.0</td>
</tr>
<tr>
<td>Foreign Investments in health (a) %</td>
<td>--</td>
<td>--</td>
<td>2.3</td>
<td>0.6</td>
<td>0.8</td>
<td>2.6</td>
</tr>
<tr>
<td>Remittances (b) (€Million)</td>
<td>418.0</td>
<td>467.1</td>
<td>515.6</td>
<td>535.4</td>
<td>505.6</td>
<td>511.6</td>
</tr>
</tbody>
</table>

The highest health authority in Kosovo belongs to Ministry of Health which in 1999 used to be called the Health Secretariat, continuing as Department of Health and Social Welfare under United Nations Interim Administration Mission in Kosovo (UNMIK). Based on UNMIK Regulation 2001/19 on Provisional Institutions of Self Government, article 2.2, current MoH had to jointly function with Ministry of Environment and Spatial Planning. By UNMIK Regulation 2002/5 on amending Regulation 2001/19 as branch of PISG, MoH as independent institution within GoK started to function with these goals:

- Reduction of morbidity and mortality
- Improving management of existing resources and quality of services
- Functionality, reorganization and amendment of the existing health system and provide medical equipment in accordance with European standards
- Implementation and development of health information system
- Creating a sustainable funding system of the health sector

There are two categories of medical services available in Kosovo: public and private. Reorganization in the health sector after the war is divided into three levels:

- Primary healthcare - Main Family Medical Centers, Family Medical Centers and Family Medical Ambulances.

---

- Secondary healthcare with 5 regional hospitals (Mitrovica, Peja, Prizren, Gjakova, Gjilan) and 2 city hospitals (Ferizaj and Vushtrri)...with 1927 beds
- Tertiary health care – University Clinical Center....with 2109 beds, National Institute of Public Health, University Dentistry Clinical Center, National Center of Blood Transfusion and Institute of Sports Medicine.

Private health care sector in Kosovo consists of 1200 medical institutions that provide primary and secondary healthcare services. Private sector activity in Kosovo is regulated by Law No. 2004/50 on private practices in healthcare. Private healthcare institutions are sometimes considered as a ‘black box’ in middle income countries as Kosovo is due to the insufficiency of data on the numbers and types of providers, the movement of workforce in and out of the public sector, the quality and cost of care.

Many previous governments in Kosovo have declared health their top priority. However, after more than a decade since the end of the war challenges are many, to the extent that there are talks of a complete lack of a health system. Regulation of the healthcare system according to human rights institutions should have been an emergency priority of the Kosovo Government. MoH is responsible to make healthcare policies but unfortunately it deals with the management of healthcare institutions. Kosovo lacks basic laws and administrative instructions for healthcare which as a result has ongoing inefficient policies. Current Law on Health 2004/04 is in the process of change and Health Insurance Law is in the process of preparation of which is expected to alleviate the situation in this area that additionally will have an impact in the maintenance of hospital facilities. In this regard only around 1.5% of the Kosovo population has health insurance mainly private packages commonly contracted by big and highly profitable companies for their staff members.
CHAPTER TWO – Healthcare expenditures and EVS in hospital facilities

This chapter discusses healthcare situation throughout the past 10 years in Kosovo and the events and indicators that characterize the current healthcare situation. The discussion goes on with Kosovo’s healthcare facilities with the main focus on UCCK as a reference point of overall healthcare in Kosovo. Discussions in terms of the EVS in hospital facilities, expenditures and budget allocation in this field and comparisons with other states in Balkans and Europe are given in this chapter.

2.1. Some metric indicators

UCCK is situated in the capital city of Kosovo with the total internal space of 115,595 m². Healthcare premises that were constructed in mid 50s of the last century due to improper technical and hygienic maintenance look outdated in terms of external and internal appearance. In table 2.1. are displayed metric indicators of some clinics within UCCK campus.

Table 2.1. Metric indicators in some clinics in UCCK campus. Its market value is estimated by Technical Unit in UCCK on 2008

<table>
<thead>
<tr>
<th>No.</th>
<th>Buildings in UCCK</th>
<th>Area (m²)</th>
<th>Constructed (year)</th>
<th>Years of use</th>
<th>Market value (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Surgery Clinic</td>
<td>10450</td>
<td>1959</td>
<td>52</td>
<td>8,450,00</td>
</tr>
<tr>
<td>2</td>
<td>Gynecology</td>
<td>24000</td>
<td>1976</td>
<td>35</td>
<td>14,300,00</td>
</tr>
<tr>
<td>3</td>
<td>Internal</td>
<td>6801</td>
<td>1971</td>
<td>40</td>
<td>2,860,00</td>
</tr>
<tr>
<td>4</td>
<td>Pediatric</td>
<td>7480</td>
<td>1968</td>
<td>43</td>
<td>2,990,00</td>
</tr>
<tr>
<td>5</td>
<td>Dermatology&amp;Chest</td>
<td>3658</td>
<td>1988</td>
<td>23</td>
<td>1,560,00</td>
</tr>
<tr>
<td>6</td>
<td>Neurology</td>
<td>7768</td>
<td>1984</td>
<td>27</td>
<td>3,900,00</td>
</tr>
<tr>
<td>7</td>
<td>Infectology</td>
<td>6940</td>
<td>1972</td>
<td>38</td>
<td>1,885,00</td>
</tr>
<tr>
<td>8</td>
<td>Oncology</td>
<td>3000</td>
<td>2010</td>
<td>1</td>
<td>780,000</td>
</tr>
<tr>
<td>9</td>
<td>ORL&amp;Eye</td>
<td>16000</td>
<td>1978</td>
<td>32</td>
<td>10,400,00</td>
</tr>
<tr>
<td>10</td>
<td>Institutions</td>
<td>4725</td>
<td>1988</td>
<td>22</td>
<td>5,460,00</td>
</tr>
</tbody>
</table>

The registration of total assets shows that in 2009 the total value of lands and buildings (clinics) is €145,266,145.00\[^{11}\]. UCCK is the only tertiary healthcare institution in Kosovo based on the Law on Health No.2004/14. However MoH being the founder approved a statute of UCCK on 21\(^{st}\) of August 2007. The first article states that UCCK is established in December 1958. Its primary functions were to be in the capacity of the Hospital of Prishtina until the decision for opening the Medical Faculty within the University of Prishtina was taken on 17\(^{th}\) of June 1969. Based on Law on Health No.2004/14, article 31.1 in correlation with Medical Faculty within University of Prishtina, UCCK organizes and offers and applies tertiary healthcare services,

secondary healthcare in Pristina region and also the university level of education as well as scientific research and specialized education.

UCCK is organized in:

- Clinics ............. 18
- Institutions......... 8
- Centers............... 4
- Technical Services & Administrative Units

Figure 2.1 – View of the UCCK Campus

1. ORL Clinic
2. Surgery Clinic
3. Ophthalmology Clinic
4. Internal Clinic
5. Emergency Center
6. Clinic of Infection diseases
7. Dentistry ambulance
8. Research Institutions
9. Family Medical Main Center
10. Deanery
11. Psychiatry Clinic
12. Neurology Clinic
13. Orthopedic Clinic
14. Oncology Institute
15. Main Kitchen
16. Lavatory
17. Clinic of Chest medicine
18. Dermatology Clinic
19. Gynecology Clinic
20. Pediatric Clinic
21. Drug Agency
2.2. What are environmental services (EVS) in hospital facilities

It is highly important to protect the environment in a healthcare facility from becoming a reservoir of unwanted microorganisms. EVS are part of hospital team whose work directly makes and impact not only on daily operations in the hospital but also on the most important deliverables that are being content and results. EVS do more than produce clean, comfortable and safe environment for patients, staff and visitors. As a functional unit in healthcare facility they are responsible for general maintenance of safety and housekeeping that with the services they provide they must deliver quality of daily life. Housekeepers should ensure that the worksite is maintained in a clean and sanitary condition. The cleaning of environmental surfaces can be divided into items that need to be cleaned frequently because of the high degree of handling and the risk of cross contamination and includes toilets, medical knobs or handles, bedrails, doorknobs, and light switches. Alternatively surfaces as floors, walls, curtains, lights and ventilation screens usually need less frequent cleaning. It is unlikely that dirty floors or walls will directly cause HCAI but if visibly soiled they should be cleaned immediately.\[12\]

In Kosovo the standards are poor in almost all hospitals and this has to change. Since there are no standards it is needed to embrace practices of other hospitals in the region or abroad. The standards are based on the outcome. The nature of the different hospitals varies based on local circumstances (patient composition, age and design of the buildings) and each has different requirements. These requirements will include the development of cleaning manuals, training programs and decisions about staffing. The cleanliness of any hospital environment is important for infection control and patient well-being. Cleaning staff play an important role in quality improvement and in reducing infection related risks.

The reply on estimation toward the medical personnel and patients - “Please indicate how do you agree with the following statement – The environmental services in hospitals are substandard”, is shown on figure 2.2.

Figure 2.2. EVS in hospitals are substandard (Capstone project questionnaire, January 2012)

\[12\] NHS Standards of Cleanliness, March 2003, pp.25
For meeting these requirements funding is the fundamental part for cleanliness. Below the table 2.2 and figure 2.3 shows expenses during the previous year’s related to EVS in UCCK.

**Table 2.2. Comparison between UCCK and EVS budget**[13]

<table>
<thead>
<tr>
<th>Description</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCCK budget (€M)</td>
<td>20,028,032</td>
<td>15,661,872,00</td>
<td>18,698,096</td>
<td>20,747,520</td>
<td>23,737,276</td>
</tr>
<tr>
<td>UCCK budget on EVS</td>
<td>799,778,56</td>
<td>481,656,03</td>
<td>665,834,07</td>
<td>810,550,37</td>
<td>953,643,87</td>
</tr>
</tbody>
</table>

**Figure 2.3. Comparison between UCCK and EVS budget**

Even though the huge amount of budget is allocated for EVS, especially in UCCK, the hygienic situation is still very poor. It may cause outbreak of infection firstly in patients and than medical staff. In the Agency for Bussines Registration of the Ministry of Trade and Industry[14] 249 private companies are registered that practice this bussines in Kosovo. These registered companies do not possess any proper background to provide EVS in hospital facilities. Until now, based on their provided documentation, only the Company “Uni Project” registered in Prishtina (bussines number 703283326) is equiped with the certification on conducted trainings and ability of conducting EVS trainings for hospital facilities issued by British Institute for Cleaning Science in London.

[13] Budget and Finance Unit in UCCK
[14] Ministry of Trade and Industry / Agency for Business Registration
In the survey conducted, due to compilation of the final report, 100 HCWs and administrative staff were interviewed, who to the last question: How much do you think (estimate) is spent in EVS for each patient admitted in UCCK/1 year, had different answers which shows their lack of information on the issue. (see figure 2.4.)

Figure 2. 4. How much do you think (estimate) is spent in EVS for each patient admitted in UCCK/1year (capstone project questionnaire, January 2012)

The facts gave us different results that are shown in the table below, which indicate that only 19% of the interviewers answered correctly the last question of the questionnaire.

Table 2.3. Relation between EVS expenditures and admitted patients in UCCK
Source. (1) UCCK-Budget Unit and (2)Statistic Agency of Kosovo.

<table>
<thead>
<tr>
<th>Description</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) EVS budget</td>
<td>481,656,03</td>
<td>665,834,07</td>
<td>810,550,37</td>
<td>953,643,87</td>
</tr>
<tr>
<td>(2) Patients admitted</td>
<td>499,637</td>
<td>497,229</td>
<td>504,258</td>
<td>499,637</td>
</tr>
<tr>
<td>1/2(€)</td>
<td>0.96</td>
<td>1.33</td>
<td>1.60</td>
<td>1.90</td>
</tr>
</tbody>
</table>

Cleaning procedures and methods vary among healthcare settings, therefore each institution must establish and write their own policies and procedures and in this regard the planning of the budget is included. Improper financial planning, bearing in mind that UCCK is playing the role of secondary and tertiary healthcare institution, at the same time causes degradation and destruction of the facilities and transformation of these facilities in the reservoir of unwanted microorganisms. The need of each institution varies and must be assessed by a team of experts. These experts establish regular cleaning schedules, effective cleaning methods, write policies and procedures, and select the appropriate cleaning agents and equipment [15]. Since these precautions in terms of EVS and maintenance in general are

not undertaken and there is no indication that these actions are not a priority of neither UCCK management nor MoH, the outbreak of infection and substandard hygiene in different clinics is shown in figure 2.5.

Figure 2.5. EVS current situation in some clinics of UCCK

Cat in Pediatric Clinic’s hallway

Manual EVS equipment in UCCK

Uncollected catheters in Surgery Clinic

Unclean toilet in Urology Unit

Uncollected waste in Surgery Clinic

EVS equipment in Oncology Institute
Procedures of Hygiene Services and protection of the hospital environment

Gynecology Clinic ceiling in toilet

Uncollected waste in UCCK toilets

Housekeeper wearing unclean uniform

Unclean and unrepaird floor cleaning EVS machine

EVS storage

EVS storage
2.3. Healthcare expenditures

Two main challenges in healthcare area in Kosovo are the lack of financial support and the lack of political commitment. This situation continues since 2000. Usually, total expenditures for health in Kosovo are roughly 7% of the total government budget. The expenditures for health in Kosovo compared to expenditures in the countries of Balkan region and Europe are the lowest ones. Despite the cut in recent years there is a trend for increased government fund allocations to health sector they still seem to be insufficient. The figures below are from WHO-2006 report which show the health expenditure ($)/capita for Balkan countries and Europe compared to Kosovo.

Figure 2.6. Health Expenditure (€) per capita (Region and Europe)
Figure 2.7. Health Expenditure as %/GDP (Balkan and Europe)
2.4. Kosovo’s Government expenditures on healthcare

Government of Kosovo, since MoH is established in 2002, has allocated roughly 7% of the budget for health expenditures (table 2.4. and figure 2.8).

Table 2.4. Allocated Kosovo Budget for MoH

<table>
<thead>
<tr>
<th>Description</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCB (€)</td>
<td>656,200.00</td>
<td>717,473.90</td>
<td>888,900.00</td>
<td>956,500.00</td>
<td>1,129,510.00</td>
<td>1,414,928.00</td>
</tr>
<tr>
<td>MoH Budget (M€)</td>
<td>48,646.200</td>
<td>52,169.666</td>
<td>64,768.404</td>
<td>66,282.033</td>
<td>70,825.192</td>
<td>79,079.229</td>
</tr>
</tbody>
</table>

Figure 2.8. Allocated Kosovo Budget for MoH (2005-2011)

The table and diagram above clearly show the commitment of GoK towards healthcare. The amount of nearly 7% doesn’t satisfy the needs of population with 45% of unemployment rate. This very wrong division of the Kosovo Budget for MoH is continuing and it will obviously cause decrease of the health conditions for population.

The low amount of budget division affects all conditions of health improvement in Kosovo. Its effects are visible in the appearance of facilities. Also, standards of cleanliness for hospital facilities do not exist in Kosovo. Since 2000, the EVS is assigned to private contractors that are not selected by any principles or criteria. This action, without any good measures, caused destruction of the healthcare facilities in UCCK campus that despite renovation in recent years, still remain old and may are a source of infections to patients.

2.5. Capital investments in UCCK

The Capital Investments Unit in MoH has spent a great amount of the budget on capital investments at UCCK (table 2.5. and figure 2.9.) However, the situation still remains the same considering the internal spaces in UCCK.

Table 2.5. Capital investments expenditures at UCCK 2010 -2012.\(^{[17]}\)

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCCK budget (M€)</td>
<td>66,282,030</td>
<td>70,825,130</td>
<td>79,079,230</td>
</tr>
<tr>
<td>Capital Investments in UCCK (M€)</td>
<td>4,128,111</td>
<td>5,538,500</td>
<td>3,436,000</td>
</tr>
<tr>
<td>%</td>
<td>6.2</td>
<td>7.8</td>
<td>4.3</td>
</tr>
</tbody>
</table>

Despite the large amount of budget allocation of MoH to UCCK regarding the capital investments, the current situation still remains poor. Investments are done as cosmetics in order to cover up the current design of internal area in UCCK which is substandard and does not meet the basic needs of a hospital. Even the current facilities are constructed in the second half of the last century, a lot of investments from KB and foreign donors were part of the improvements that tried to change the overall situation in the only tertiary healthcare institution in Kosovo.

On question no. 26 which was dedicated to HCWs and administrative officials “Please indicate how do you agree with the following statement – Current design of the hospital facilities is substandard”, 28% of respondents strongly agree, 39% agree, 30% were neutral, and 3% disagree” (see figure 2.10)

\(^{[17]}\) Ministry of Health – Capital Investment Unit
Figure 2.10. “Current design of the hospital facilities is substandard” (Capstone project questionnaire, January 2012)

In the illustrations below (figure 2.11) it is obvious that capital investments spend in UCCK are not properly used or its immediate need to increase budget in this regard.

Figure 2.11. Shortage of capital investments at UCCK

Emergency Unit

Diagnostic Center

Generators at ICU

No ventilation at Orthopedic Clinic
Procedures of Hygiene Services and protection of the hospital environment

Outdated ceiling at UCCK

Toilet at Specialist Center

Ceiling at Gynecology Clinic

Leaks at UCCK hallway

Basement at Emergency Unit

Entrance at OTh of Vascular Surgery Unit
CHAPTER THREE – Infection control in hospital facilities

This chapter discusses the infection control in hospital facilities with a special focus on UCCK situated in the capital city. It also discusses the steps that have been overtaken to develop such a new discipline in our healthcare system compared to Health Care Associated Infections (HCAI) rates in CICU in facilities from developing countries. Along the same lines, the impact of this new discipline over IC in Kosovo’s legislation is discussed in more specific details.

3.1 Environmentally-related factors

HCAI is correlated with significant morbidity and mortality. Environment has a very considerable impact on the chances of acquiring HCAI and it varies in different places within a hospital facility. Clean, healthy and sterile environments especially in ICUs, nurseries, and operation theatres, minimize the risk of HCAIs\(^{[18]}\). Routine cleaning and disinfection is not sufficient in hospitals with continuous flow of patients which in 2011 was 500,000 only at UCCK. More efficient methods may have to be adopted to maintain the requisite standards (Wang et al., 2010). Also, architectural and engineering progression has to reshape the outlooks of the hospitals with the aim of comforting the patients. Despite all that, hospital environments remain a source of infection for the already ill patients. The hygiene at any hospital environment is very important for IC and patient well-being. EVS staff plays an important role in quality improvement, in the confidence the public has in hospitals and in the reduction the infection risks. Approximately 20–30% of HAI are considered to be preventable by intensive hygiene and control programmes.\(^{[19]}\)

Hospital environments hold a diverse group of microorganisms surrounding a patient which generally originates from patients admitted in the hospital, HCWs, visitors, or from infected wounds. In the recent years, much debate is going on the role of environmental cleaning in reducing HCAIs. According to Nuisance in the Modern Medical Epoch the apparent hygiene of hospital cannot be linked with the risk of HCAIs, but the fear and public panic due to ‘superbugs’ causing serious HCAIs, hospital environments have been blamed for such infections (pp9-10).\(^{[20]}\) However, the exact role of hospital environment in causing these infections remains unknown (Dancer, 2009). Some of the superbugs such as *Acinetobacter baumannii* (68.7% of patients in CICU of UCCK were diagnosed with this) and *Pseudomonas aeruginosa*, are extremely difficult to eradicate even with the advanced disinfection techniques. Hospital room surfaces, including toilets that are part of CICU in UCCK, and inanimate objects such as blood pressure set, stethoscope, etc., can become colonized with resistant microorganisms. Ungloved hands can become 50% more contaminated with low level pathogenic microorganisms (Bhalla et al., 2004).

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\(^{[18]}\) APIC, Infection Control and Epidemiology, second edition 2005

\(^{[19]}\) European Center for Disease Control, Stockholm [www.ecdc.europa.eu](http://www.ecdc.europa.eu)

\(^{[20]}\) Nuisance in the Modern Medical Epoch pp.9-11
Based on the CDC and Prevention guidelines for environmental infection control in health-care facilities of 2003, the health-care facility environment is rarely implicated in disease transmission, except among patients who are immunocompromised\(^{[21]}\).

### 3.2. Infection control in developing countries

Healthcare systems in developing countries are hospital-dominated, with 50-80% of resources allocated in urban areas, which often have tertiary academic affiliations. In Kosovo there is only one tertiary healthcare institution which at the same time plays the role of the regional hospital. On the other hand, a large number of people present in the other regional hospitals (Kosovo has five regional and two city hospitals), have inadequate resources, staff training, and low motivation (Duke et al., 2006). This according to Duke has negative impact on the health of millions of people. IC in developing countries differs substantially from that in the developed world by the limited resources that represent the main challenge for governments in these countries. High frequency in healthcare facilities is an indicator of poor quality of healthcare services. Also HCAI constitute an important role related to health problems throughout the world and pose major threat to patient safety.\(^{[22]}\)

Prevention and control in low and middle income countries differs substantially from that in the developed world with high income. In Kosovo lack of commitment to healthcare by policy makers and allocation of funds is often disproportionate to the priorities essentially needed for population. Priority in the allocation of funds is often directed to visible targets within society such as schools, infrastructure and security until healthcare frequently is far behind (7%). According to Christopher Sudhaker (2012) HCAIs represent one of the most adverse events during delivery of health care, complicating 5-10% of admissions in hospitals in industrialized countries. More than 4 million patients are affected by HCAI every year in Europe and 1.7 million in USA. In developed countries, approximately 25-30% of patients admitted to ICU and surgery clinics are affected by HCAI. In developing countries the global picture of HCAI is unknown due to lack of reliable data and the use of different definitions and methodologies. Only 23 developing countries of 147 (15.6%) reported a functioning HCAI national surveillance (Sudhaker 2012) system in 2010. HCAI in developing countries varied from 5.7% to 19.1% until the increased length of stay associated with HCAI varied between 5 and 29.5 days, which have impact in overall cost of prevention of HCAI (table 3.1 and figure 3.1)

Corruption and informal payments in Kosovo are frequent. Inadequate salaries lower the healthcare workers’ motivation for quality care. Patients and their families may be required to provide care materials such as syringes, surgical gowns, and pharmaceuticals. Frequent movement of patients and staff between hospitals wards results in an increased risk of transmission of multidrug-resistant microorganisms (Clements et al., 2008). Such transmission is often exacerbated by overcrowding, with patients sometimes sharing beds and

\(^{[21]}\) Center for Disease Control and Prevention in Atlanta, USA. [www.cdc.gov](http://www.cdc.gov)

\(^{[22]}\) Burke J. Infection Control-a problem for patient safety. 2003
Regarding overall costs that are substantial everywhere, they vary between countries due to different health care systems. Its impact in Europe is about 7 billion euro per year and 16 million extra days of hospital stay (ECDC, 2008), whereas in the USA, associated costs are approximately $ 6.5 billion (Klevens et al., 2007).

### Table 3.1. – Overall HCAI rates in hospital facilities from developing countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of study/unit</th>
<th>HAI rate (%)</th>
<th>Year</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Multicentre Adult ICU</td>
<td>27.0</td>
<td>2003</td>
<td>Rosenthal</td>
</tr>
<tr>
<td>Brazil</td>
<td>Multicentre Adult ICU</td>
<td>29.6</td>
<td>2006</td>
<td>Salomao</td>
</tr>
<tr>
<td>India</td>
<td>Multicentre Adult ICU</td>
<td>12.3</td>
<td>2005</td>
<td>Mehta</td>
</tr>
<tr>
<td>Mexico</td>
<td>Multicentre Adult ICU</td>
<td>24.4</td>
<td>2006</td>
<td>Ramirez</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>Newborn ICU</td>
<td>35.8</td>
<td>2002</td>
<td>Al-Ghamdi</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Adult medical ICU</td>
<td>40.0</td>
<td>2003</td>
<td>Gosling</td>
</tr>
<tr>
<td>Kosova</td>
<td>Adult CICU</td>
<td>68.7</td>
<td>2006</td>
<td>Spahija</td>
</tr>
<tr>
<td>Turkey</td>
<td>Neurology ICU</td>
<td>88.9</td>
<td>2006</td>
<td>Cevik</td>
</tr>
</tbody>
</table>

Figure 3.1. – Overall HCAI rates in hospital facilities from developing countries

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[23] Infection Control – Updates Edited by Christopher Sudhakar, pp. 61-67
3.3. Infection control in Kosovo

IC does not exist as a medical or nursing specialty, and formal training programs on infection control were not available in medical schools in Kosovo until 2005 when the Infection Control course was introduced in the teaching process. But still IC is in its infancy compared with IC programs in Western Europe that have been in place for 30-40 years. The first steps for new perceptions of IC came to Kosovo through initiatives organized by Canadian Public Health Association. Initial education and trainings were established within the UCCK only, through an exchange program with an IC team from Kingston, Canada.[25] Many clear recommendations were not applied in practice due to poor co-operation by the hospital leaders, who changed frequently.

Research have been conducted in UCCK as the only tertiary health care institutions in Kosovo with 1972 beds and approximately 500,000 admitted patients per year.[26] The CICU is a mixed one with 14 beds, and is the highest risk area for acquisition of health care associated infections. The molecular characterization of bacterial isolates for the studies was conducted by Dr. Lul Raka, microbiologist in National Institute for Public Health. From March 16th to July 27th 2006, a total of 30 Acinetobacter baumanii isolates were analyzed from 30 patients (24 males, 6 females) admitted in CICU. Their age range was from 2 to 82 years (table 3.2). Previous prevalence studies in Kosovo showed high rates of HCAI in UCCK (17.4%) and in CICU with 68.7% of patients.[27]

A study of compliance with hand hygiene in CICU showed alert rate of only 19%. During the outbreak period alcoholic hand rubs were not used in CICU. There are three washing sinks in the clinic. Low number of wash sinks contributed to high rate of infection in CICU. Gloves were not changed after each contact with patients by the physicians until technicians used to do so, but avoided hand washing. Poor EVS staff with the obvious lack of trainings and surveillance, by using the same equipment in internal area of CICU and other areas (toilets and hallways) contributed in high rate of HCAI. The main obstacle in this regard is the position of the CICU in the most frequented part of UCCK which is in hallway between Emergency Centre and Surgery Clinic with no prior filter area.

CICU is the reference centre for patients of other UCCK clinics, from regional and private hospitals as well. Delay of referral to this unit contributed to infections, severity of illness and poor outcome prognosis for the patients. The first study of prevalence of HCAI in high risk areas (as the CICU is in UCCK) was undertaken in 2003 that showed an overall prevalence of 17.4% (29 infections in 167 patients)[28]. In these results the research of which are not conducted often, inadequate number of trained personnel, CICU as an overcrowded

[27] Lul Raka, Smilja Kalenic, Zrinka Bosnjak, Epidemiology of Acinobacter Baumanii in CICU in Kosova Teaching Hospital – Brazilian Journal of Infection Diseases 2009:
[28] Lul Raka, Smilja Kalenic, Zrinka Bosnjak, Epidemiology of Acinobacter Baumanii in CICU in Kosova Teaching Hospital – Brazilian Journal of Infection Diseases 2009
area and the only ICU that admits patients with different pathology of diseases (all of them lying in the same ward) and insufficient equipment and supply affects CICU situation.

Tab. 3.2 Clinical data with Acinetobacter baumanii isolated in CICU from March 16th to July 17th 2006. [29]

<table>
<thead>
<tr>
<th>No.</th>
<th>Gender / age</th>
<th>Day of isolation</th>
<th>Length of stay CICU</th>
<th>Diagnosis</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M/66</td>
<td>17</td>
<td>18</td>
<td>Tumor Cerebral</td>
<td>Died</td>
</tr>
<tr>
<td>2</td>
<td>M/33</td>
<td>4</td>
<td>28</td>
<td>Tumor Cerebral</td>
<td>Died</td>
</tr>
<tr>
<td>3</td>
<td>M/62</td>
<td>3</td>
<td>18</td>
<td>Tumor Cerebral</td>
<td>Died</td>
</tr>
<tr>
<td>4</td>
<td>M/17</td>
<td>1</td>
<td>14</td>
<td>Diabetes</td>
<td>Recovered</td>
</tr>
<tr>
<td>5</td>
<td>M/11</td>
<td>12</td>
<td>37</td>
<td>Politrauma</td>
<td>Transferred</td>
</tr>
<tr>
<td>6</td>
<td>M/62</td>
<td>4</td>
<td>6</td>
<td>Politrauma</td>
<td>Died</td>
</tr>
<tr>
<td>7</td>
<td>M/41</td>
<td>4</td>
<td>28</td>
<td>Politrauma</td>
<td>Recovered</td>
</tr>
<tr>
<td>8</td>
<td>F/33</td>
<td>10</td>
<td>14</td>
<td>Politrauma</td>
<td>Transferred</td>
</tr>
<tr>
<td>9</td>
<td>M/51</td>
<td>14</td>
<td>59</td>
<td>Cerebral Infarct</td>
<td>Died</td>
</tr>
<tr>
<td>10</td>
<td>M/2</td>
<td>1</td>
<td>10</td>
<td>Politrauma</td>
<td>Died</td>
</tr>
<tr>
<td>11</td>
<td>M/21</td>
<td>8</td>
<td>10</td>
<td>Politrauma</td>
<td>Died</td>
</tr>
<tr>
<td>12</td>
<td>M/72</td>
<td>3</td>
<td>5</td>
<td>Cerebral Infarct</td>
<td>Died</td>
</tr>
<tr>
<td>13</td>
<td>M/43</td>
<td>1</td>
<td>13</td>
<td>Cardiac Arrest</td>
<td>Recovered</td>
</tr>
<tr>
<td>14</td>
<td>M/55</td>
<td>4</td>
<td>8</td>
<td>Politrauma</td>
<td>Recovered</td>
</tr>
<tr>
<td>15</td>
<td>M/74</td>
<td>18</td>
<td>23</td>
<td>Politrauma</td>
<td>Recovered</td>
</tr>
<tr>
<td>16</td>
<td>M/71</td>
<td>9</td>
<td>34</td>
<td>Politrauma</td>
<td>Recovered</td>
</tr>
<tr>
<td>17</td>
<td>M/57</td>
<td>2</td>
<td>8</td>
<td>Politrauma</td>
<td>Transferred</td>
</tr>
<tr>
<td>18</td>
<td>M/46</td>
<td>14</td>
<td>20</td>
<td>Tumor cerebral</td>
<td>Recovered</td>
</tr>
<tr>
<td>19</td>
<td>F/20</td>
<td>2</td>
<td>15</td>
<td>Politrauma</td>
<td>Died</td>
</tr>
<tr>
<td>20</td>
<td>M/22</td>
<td>1</td>
<td>1</td>
<td>Politrauma</td>
<td>Transferred</td>
</tr>
<tr>
<td>21</td>
<td>M/50</td>
<td>5</td>
<td>11</td>
<td>Tumor Cerebral</td>
<td>Died</td>
</tr>
<tr>
<td>22</td>
<td>F/24</td>
<td>15</td>
<td>30</td>
<td>Myocardiopathia</td>
<td>Died</td>
</tr>
<tr>
<td>23</td>
<td>M/82</td>
<td>8</td>
<td>32</td>
<td>Peritonitis</td>
<td>Died</td>
</tr>
<tr>
<td>24</td>
<td>F/54</td>
<td>26</td>
<td>44</td>
<td>Peritonitis</td>
<td>Transferred</td>
</tr>
<tr>
<td>25</td>
<td>F/72</td>
<td>12</td>
<td>34</td>
<td>Cardiac Arrest</td>
<td>Died</td>
</tr>
<tr>
<td>26</td>
<td>M/60</td>
<td>10</td>
<td>14</td>
<td>Cerebral Infarct</td>
<td>Died</td>
</tr>
<tr>
<td>27</td>
<td>M/74</td>
<td>8</td>
<td>17</td>
<td>Politrauma</td>
<td>Recovered</td>
</tr>
<tr>
<td>28</td>
<td>F/71</td>
<td>10</td>
<td>19</td>
<td>Politrauma</td>
<td>Transferred</td>
</tr>
<tr>
<td>29</td>
<td>M/61</td>
<td>16</td>
<td>19</td>
<td>Cerebral Infarct</td>
<td>Died</td>
</tr>
<tr>
<td>30</td>
<td>M/20</td>
<td>8</td>
<td>11</td>
<td>Politrauma</td>
<td>Died</td>
</tr>
</tbody>
</table>

The main risk factors for acquisition of infection in hospital are:
1. Domestic factors conditioned by the need of hospital treatment,
2. Invasive diagnostic procedures,
3. Poor compliance of hand hygiene of medical personnel,
4. Uncontrolled use of antibiotics,
5. Hygienic maintenance of internal environment of the hospital facilities,
6. Proper waste management

[29] Lul Raka - Molekular Epidemiology of Acinobacter Baumanii in CICU in Kosova Teaching Hospital
www.bjid.com.br
On question no. 24 addressed to the medical personnel and administrative officials “Please indicate how do you agree with the following statement – Infection Control Unit in UCCK is inefficient”, 32% of respondents strongly agree, 50% agree, 17% were neutral, until only 1% disagree” (figure 3.2)

Figure 3.2 “Infection Control Unit in UCCK is inefficient”, (capstone project questionnaire, January 2012)

### 3.4. Hand hygiene

Hand hygiene remains the primary measure to prevent the HCAI and reduce spread of infection in patients and the cross contamination as well. Although hand hygiene is a simple measure, the lack of compliance among HCWs is problematic worldwide averaging <40%. Hands become progressively contaminated during patient care: the longer the duration of care, the higher the level of contamination. HCWs play a key role in transmitting organisms from one patient to another. However, they also may be a source of infection themselves, if they are infected with pathogens which they pass onto patients. In UCCK due to lack of providing plastic gloves the possibility of transmitting of HCAI is certain, but there is no research done in this matter. Failure to perform hand hygiene is probably the only most important factor in transmission of healthcare associated infections. Taking into account the strength of evidence for the importance of hand hygiene, it is noteworthy that compliance is still so low. Several studies have documented that in daily clinical practice hand hygiene is hardly performed in more than half of the cases where it should, and only one third of those who perform hand hygiene do it correctly (Kolmos et al 2006). In 2002, the CDC and Prevention situated in Atlanta is recommended the use of alcoholic hand rubs which have the advantage which can be placed on the bedside. In USA, the installation of alcoholic based hand rub dispensers is allowed on January 2006 by Joint Commission on Accreditation of Healthcare Organizations (JCAHO) which states the conditions that they have to meet. In

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[31] CDC Recommendations for Prevention of Surgical Infection of 1999
healthcare facilities with scarce conditions as UCCK it is easier to provide ABHR dispensers than sinks with running water and a functioning running system, but also these conditions are hardly going to be met because of the lack of management (figure 3.3)

Figure 3.3. Clinics and centers within UCCK are shown, where due to the lack of investments and poor engagement of EVS staff and UCCK management the position of sinks and its surroundings is an inappropriate one. The lack of providing the liquid soap dispensers and disposal of plastic waste containers offer a sure possibility on spreading of infections via hand.

Figure 3.3. Position of sinks and ABHR in clinics and centers at UCCK

Introduction of ABHR has led to increased hand hygiene compliance among healthcare workers and fewer HAI. In some developing countries implementation of education, process surveillance, and performance feedback has considerably enhanced hand hygiene compliance.

HCWs in Kosovo in 2010 are provided with brochure “Hand hygiene in healthcare” enabled by WHO office in Prishtina and financed by Luxemburg Government. In this brochure responsibilities of leaders of healthcare institutions in order to improve and decrease HCAI are specified by:

- Ensuring appropriate conditions on promoting the modal strategy of hand hygiene and access that promotes a culture for patient’s safety
- Ensuring the access to running water in all the clinics and sufficient hygiene equipment
- Ensuring ALHR alongside the patients’ bed
- Offering to the health care workers trainings on infection control including sessions of hand hygiene
- Ensuring that water supply is technically separated from the drainage and sewerage system.
3.5. Infection control in Kosovo’s legislation

In order to overcome this new situation in healthcare facilities, especially in UCCK, in terms of HAI, MoH began undertaking some steps with the only purpose to prevent an outbreak.

- February 2004 – MoH compiled the program for prevention of HCAI
- December 2005 – after the outbreak of the HAI in CICU in UCCK the prime minister Rexhepi was announced, but the situation was underestimate from the GoK
- May 2006, MoH established the Kosovar Council for Prevention and Control of HCAI with 9 members and begin compiling criteria, compose protocols in order to prevent patients and medical staff from infection in healthcare facilities
- On 2007 the infection control committee at UCCK was gathered for the last time
- On 7th April 2011 by the previous initiative of Minister of Health Mr. Ferid Agani and the group of experts the Strategy and the Action Plan for antimicrobial resistance was compiled
- On 3rd of November 2011 the Administrative Instruction No.05/2011 for Prevention and Control of Hospital Infection was signed (figure 3.4)

3.6. Future direction

Sources and transmission routes of HCAI infections are numerous and complex. In many cases they are only partly understood, and the hygienic measures taken to control transmission are not always ideal. In many areas there is a need for more research to clarify the origin of HCAI in the clinics in order to develop and implement more efficient interventions.

Further researches should focus not only on technical and medical aspects, but should also involve human behavior which is one of the key factors in transmission of infections in the health care setting. Also practices from hospitals in the region (Skopje, Tirana, Istanbul) should lead toward increasing the knowledge and caution that these practices could be implemented by being able not to spend great amount of €-s in these county hospitals. Kosovo has already achieved the first two steps in improving Infection Control: recognition and appraisal of the problem. The next step will be the most difficult - intervention in the field and now the problem has been identified. Future direction in the field of Infection Control in Kosovo will focus on the following areas: sterilization, disinfection and environmental control, education of healthcare workers, occupational health, legislation and work on improving strategies, guidelines and policies on specific Infection Control issues. In facing the challenge of Infection Control, endurance will be essential.

The risk of patients and HCWs acquiring HCAIs could be significantly reduced if governments make infection control a high priority. Administrative controls are amongst the most important steps in prevention and control of HCAIs. In environmental aspect engagement of specialized companies to conduct EVS is an imperative of the time and currently it is the last moment to undertake serious actions due to the poor performance during the past years. Therefore healthcare authorities must establish and support a comprehensive, effective national program. Such a program should set national objectives
and develop strategies, guidelines and policies for specific infection control issues which are regularly updated. Through focusing on infection control, MoH in collaboration with GoK, can improve the quality of healthcare in the future by engaging professionally trained infection preventionists and empowering IC units in all hospitals.

Figure 3.4. Organizational hierarchy of IC in hospitals in Kosova by Administrative Instruction No. 05/2011

![Organizational hierarchy of IC in hospitals in Kosova by Administrative Instruction No. 05/2011](image)

Figure 3.5. “Poor EVS may cause infection at patients”, (Capstone project questionnaire, January 2012)

![Bar chart showing responses to the question](image)
CHAPTER FOUR - Questionnaires conducted with medical personnel and patients – Project Investigation & Analysis

Good hospital care depends on getting the basics right: making sure that the food is good, the care is proper and the wards are clean. Also patients have a right to expect a welcoming environment, particularly at the time when they might be in pain and feel threatened by unfamiliar surroundings and so do not lose faith in the whole system. Rightly or wrongly, people will judge the quality of the service by the way it presents itself at first glance. A hospital that appears dirty, untidy and uncared may leads patients to believe that the care it offers is also poor. Staff either medical or environmental may feel demoralized and may not give their best. A quality care environment is not a luxury – it is a fundamental of good care and needs to become stronger with the appropriate standards and procedures. The cleanliness has to be the key part of how each hospital’s performance is displayed because patients want to know that the fundamentals of care are there for them.

This capstone project has addressed the problem of Environmental Services in hospital facilities, which are one of the main factors that have an impact on infected related risks. These risks are directly related to patient’s health as well as in length of stay and increase of health expenditures. In this regard the cleaning staff plays an important role in quality improvement, in the confidence that public has in hospitals and in reducing infection related risks. This role should be recognized and supported by the management which in UCCK is unprofessional itself and its poor performance during the past years transforms the only tertiary health care institution in Kosovo into an organism that offers poor services. There are no standards and procedures on improving the cleanliness in this institution, which is the referent point of Kosovo healthcare in general. The Environmental Services process must be organized on a more professional level that according to replies to the questionnaire and current substandard situation include conducting trainings with EVS personnel that will increase their performance, the budget and engage more professional management staff on leading healthcare institutions.

This chapter describes two questionnaires that were conducted with HCWs & administrative staff in UCCK and MoH and also patients & visitors that were part of treatment or accompanied their close ones. Also in this chapter GoK and MoH obstacles are introduced, in terms of insufficient budget allocation, respectively lack of will and interests of these two main leading institutions that as stakeholders are involved in the decision making process in healthcare system in Kosovo. A via e-mail and a face to face a questionnaire in most of the cases was used. The selection of the persons is done upon their will to participate and their belief that by this act they will at least help them improve EVS in UCCK and other hospitals in Kosovo. The survey took almost two months to complete (December 2011 – January 2012).
4.1. HCWs and administrative staff engaged in UCCK and MoH

The first questionnaire includes questions and answers for HCWs (physicians, nurses, and technicians) and administrative staff engaged in UCCK and MoH. In 100 submitted questionnaires submitted respondents were eager to answer in all questions of which 70% were physicians, 17% nurses, 8% technicians and 5% administrative employees engaged in MoH and UCCK. The questionnaires did not specify the clinics where HCWs are engaged, due to confidentiality (see figure 4.1.)

Figure 4.1. Respondents’ participation and education

Regarding EVS in hospitals, respectively in UCCK, their impression is almost bad upon the reply on the question no.7: “Have you been satisfied with EVS offered in UCCK” is 98% versus 2%. The chart is shown in Figure 4.2.

Figure 4.2. Impressions on EVS in UCCK by HCWs and administrative staff
Regarding which EVS respondents are not satisfied is shown in the Figure 4.3. Since the respondents circled more than one option, the results are not shown in %. The unclean toilets are leading with 100, continuing with bad equipment, unqualified housekeepers and unclean patients’ rooms with 93-96 votes.

Figure 4.3. With which EVS the HCWs are not satisfied

Substandard EVS in hospital facilities may cause HCAI and cross infection among HCWs and patients as well, upon CDC and Prevention Guidelines of 2003, the United States Federal Agency within department of Health and Human Services. This respected agency is established to work on protection of public health and safety by providing guidelines to enhance health decisions. Regarding infectious diseases, CDC plays an active role to focus national attention on developing and applying disease prevention and control. Since the high risk of HCAI was presented in previous chapters, i.e. at CICU in UCCK, the HCWs provide their reply on statements that may reduce or establish a proper control on HCAI in UCCK (see figure 4.4.)

Figure 4.4. “Needed action to reduce HCAI in hospitals”
The actions that management of UCCK has to undertake in order to improve EVS in UCCK are different and replies are shown in figure 4.5. These actions are determined upon the current situation in UCCK in terms of EVS and are divided in several segments of development as engagement of specialized companies, adaptations of EVS practices from hospitals in region and establishment of special hygiene control unit in UCCK as a separate body which will be in charge of hygiene maintenance in particular. All of these actions are specified in questionnaire towards HCWs on questions no.29, 30 and 31. The option to “Establish a hygiene control unit” is leading with 58% agree and 42% strongly agree, the “Engagement of specialized companies” with 53% strongly agree and 44% agree until “Adoptions of EVS practices from region” with 51% strongly agree answers and 20% neutral and 7% disagree.

Figure 4.5. “Actions that UCCK must undertake to improve EVS”

Prevention of the kinds of infections that may lead to outbreak in UCCK clinics include creating an environment of good hygiene. Steps to ensure this are:

1. washing of hands both before and after contact with the patient,
2. immediate changing of soiled bed linens,
3. not sharing towels or razors between patients,
4. using alcohol-based hand rubs on a frequent basis when entering and leaving the patient's quarters.

More serious infections at patients caused by inattentive HCWs will require isolation from other residents and patients to prevent contamination and the potential of spreading the infection to a greater number of people.
4.2. Patients and visitors treated in UCCK

The second questionnaire includes results on questions addressed to patients and visitors treated in UCCK and its clinics. There were 100 of them that replied on offered questionnaire via email or mostly face to face model in order to get the direct impression (see figure 4.6.)

Figure 4.6. Respondent based on clinics treated

![Treated respondents by clinics](image)

Regarding impression on EVS and overall hygienic situation in UCCK, the respondents replied with not a good one. The figure 4.7. shows patients impression upon their admissions and during the stay in UCCK clinics. Patients from Gynecology Clinic are more dissatisfied, than in CICU and Surgery Clinic, until patients in Eye Clinic and Clinic of Chest medicine express that the are partially satisfied by circling the option “Good”. It is sad but the option “Excellent” its not circled from any of respondents.

Figure 4.7. “Impression of patients on EVS by clinics at UCCK”

![Impression of patients on EVS based on clinics](image)
Patients and visitors were faced with a lot of EVS problems starting from old equipment, hygiene of internal spaces (rooms, toilets, hollways) waste and linen collection as well as housekeepers’ uprofessionalism. On question no.8 that is shown in figure 4.8. all of respondents circled more than one answer, which describes their great dissatisfaction about EVS at UCCK.

Figure 4.8. Patients’ and visitors’ EVS problems at UCCK

Since the EVS in hospitals is conducted by housekeepers and supervised by managers, this process was rephrased in three questions on which the patients and visitors offer their opinion of which 83% strongly agree that housekeepers are unprofessional until 4% disagree. Since toilets are the most sensitive spaces 82% think that housekeepers must clean them often while 42% of respondents strongly agree that managers should increase surveilance while 18% are neutral (see figure 4.9.)

Figure 4.9. “Patients’ and visitors’ opinion on EVS staff at UCCK”
Regarding what actions UCCK management has to undertake in order to improve current EVS situation in hospital facilities, 73% strongly agree on enforcement of penalties toward unprofessional companies until 5% disagree. In order to have friendly appearance, figure 4.10 describes that 59% of respondents strongly agree to engage professional companies while 8% are neutral.

Figure 4.10. UCCK management’s actions based on patients’ opinion

Based on answers shown above it's obvious that EVS in the hospital is substandard and for this reason patients prefer private hospitals in 74% of cases, also on the permanence of this situation 84% of patients do not agree that in terms of EVS the situation should remain the same and as conclusion patients on 69% of cases do not recommend UCCK to their family relatives and friends (see figure 4.11.)

Figure 4.11. Preference of the patients after discharge from UCCK
CHAPTER FIVE. Cleaning procedures in hospital facilities

According to the Center for Disease Control and Prevention guidelines for Environmental Infection Control in Health-Care Facilities of 2003[32] environmental surfaces are rarely associated with disease. The procedures must exist based on facility policies to protect transmission of infections to either staff or patients. The principles of cleaning and disinfecting environmental surfaces take into account the intended use of the surface or item in patient care. Housekeeping surfaces require regular cleaning and removal of dust. Most, if not all, housekeeping surfaces need to be cleaned only with soap, water, disinfectant and germicidal solution depending on the nature of the surface and the type and degree of contamination.

They are divided into two groups:

- Surfaces with minimal hand contact as floors and ceiling
- Surfaces with high touch contact as doorknobs, bed rails, light switches, wall areas around the toilets and its equipments (toilet sink, toilet seat, bathtub)

5.1. Cleaning procedures for standard patient rooms

**Purpose**
The purpose of cleaning procedures for standard patient rooms is to ensure the complete and systematic daily cleaning of each room.

Figure 5.1. Illustration of equipment and cleaning procedures for standard patient rooms

The procedures for cleaning of standard patient rooms include but are not limited to the following:

1. Greet the patient and introduce yourself
2. Remove patient room trash from the waste cans, damp wipe the waste can and replace with plastic appropriate bag. Do not store full trash liners on the floor.

Figure 5.2. Waste removal from standard patient room

[32] CDC and Prevention, Environmental Infection Control in Hospital Facilities 2003
3. Starting at the entrance there is a noticeable high level of dust. Thus, housekeepers begin cleaning at the entrance and work around the room in a circle, clockwise and continue high dusting horizontal surfaces above patient shoulder height. This practice is, however, unacceptable and therefore needs to be changed into a more appropriate one. Two golden rules apply when it comes to that: (1) Never dust above a patient; (2) High dust surfaces in the restroom.

Figure 5.3. High dusting in standard patient rooms

4. Using germicidal housekeeper and a clean cloth, sanitize all patient contact surfaces, including bedside table, chairs, also low ledges and counters, light switches, and door knobs. Wipe stains and spots from the walls and vertical surfaces as doors.

Figure 5.4. Wiping procedure in standard patient room

5. If there is a toilet in the room: using a new cloth is necessary to sanitize the restroom. Clean the mirror, grab bars, dispensers, sink fixtures, basin, underside and pipes, shower fixtures, toilet fixtures, seat and base. Use the bowl mop to sanitize the bowl rim and bowl drain. Fill with toilet tissue and paper towels in proper dispensers.

Figure 5.5. Toilet cleaning in standard patient room

6. Dust mop the floor in the room beginning with the corners and edges, moving from the far side of the room toward the door. Dust under the bed, furniture and behind the door. Leaving the dust mop at the door is the final action.
Procedures of Hygiene Services and protection of the hospital environment

Figure 5.6. Dust mopping of the floor in standard patient room

7. Place a “wet floor” sign in the door way. Damp mop the hard surface floors beginning with corners and edges, moving from the far side of the room toward the door. “U” an “S” stroke except when mopping under the bed, furniture and behind the door. Arranging the furniture and dampening the mop at the end is the final action.

Figure 5.7. Dump mopping of the floor in standard patient room

FINAL STEPS: Inspect the rooms and check to see that there is nothing that patient needs prior to housekeeper’s departure and verification with ultraviolet light.

Figure 5.8. Standard room inspection by shift manager
5.2. Discharged patient rooms cleaning procedures

Purpose
The purpose of cleaning procedures for discharged patient rooms is to ensure the complete and systematic cleaning of each incoming patient.

Figure 5.9. Equipments for discharged rooms cleaning procedures

Procedure:
1. Ensure that the patient left the room
2. Remove the trash from the waste cans, damp wipe the waste can and replace with plastic appropriate one. Do not store full trash liners in the floor.
3. High dust thoroughly starting from entranceway and working around the room in circle, also high dust in patient’s area (around and inside the bed). If room is connected to restroom, high dust it thoroughly starting from walls, and continuing with doors, windows, mirrors, hand holders and floor.
4. By using germicidal housekeeper and clean microfiber cloth, sanitize all patients contact surfaces, starting with the bed. Wipe down the top and side of the mattress. Beginning at the head of the bed, fold mattress in half and clean the underside of the mattress, springs and or frame.

Figure 5.10. Thorough cleaning of patient bad in discharged room

Note: Do not reintroduce dirty cloth into clean germicide.

5. Repeat process with the foot of the bed. Clean the head of the bed, moving to the bed rails and bed controls, then the foot of the bed and opposite side bed rails. Using the bed controls, raise the head and foot of the bed. Clean the underside of the bed beginning with the frame, and clean all under parts of the bed. Clean the wheels, removing all strings and debris, using putty knife if necessary. Proceed to clean over bed table, bedside table, phone, chairs, low ledges and counter, light switches and door knobs. As with the high dusting task, begin at the entranceway and work around the room in a circle. Use a new cloth whenever existing cloth is soiled.
6. Spot wipe stains and spots from the walls and other vertical surfaces, also if rooms have curtains remove them if applicable for proper cleaning. Continue with windows and drawers and cabinets.

Figure 5.11. High dusting in discharged patient rooms

7. Using a new cloth, dampen clean cloth in solution and clean restroom beginning with the light over the sink, moving downward. Clean the ledge of the mirror. Using the window cleaning cloth and window housekeeper, clean the mirror. Clean the sink, pipes under the sink, and spot clean walls around sink area. Clean the shower. Using the bowl mop and germicide, clean under the rim of the toilet and all around the inside of the toilet in a circular motion. Dip the cloth and clean the top and bottom of the toilet seat, then the outside of the toilet. Flush the toilet. Leave toilet seat in the up position and apply a toilet band if applicable. Restock any disposable supplies – toilet tissue and paper towels.

Figure 5.12. Toilet cleaning in discharged patient rooms

8. Dust mop the floor in the room beginning with the corners and edges, moving from the far side of the room toward the door. Maintain one leading edge with the dust mop. Dust under the bed, furniture and behind the door. Leave the dust mop at the door. Bring the dust pan and broom to the door way. Gently remove the material and debris from the duster and floor; place it in the cart bag. Return the duster to the cart, and duster head down.

Figure 5.13. Dust mopping of the floor in discharged patient room

NOTE: Place the soiled cleaning cloths and mops in the aside container for loundering.
FINAL STEPS: Housekeeper has to remove gloves and wash hands and place a “wet floor” sign on the doorway, damp mop and check to see is there anything that is left unfinished prior to departure. Shift manager’s inspection comes last with ultraviolet light checking.

5.3. **Operation theatre cleaning procedures**

**Purpose**
As the one of the most critical areas in the Operation Theatre (OTh) the extreme care must be taken due to ensure if the the following schedule is carried out rigorously in accordance with CDC Recomandations for Prevention of Surgical Infection of 1999.

Preparation: To maintain a sterile environment, the following attire is required: scrub suit, shoe covers, gloves, cap and mask. These items must be worn upon entering the surgery area. When leaving the surgery area, a cover gown must be worn and disposable PPE should be removed.

Figure 5.14. Equipment for cleaning of OTh

The EVS housekeeper will check with the Operation Theatre (OTh) supervisor or an appointed representative at the beginning of the shift to see if there are any special duties which need to be done before starting the daily routine. All equipment and supplies used in the OTh areas are designated for use in this area exclusively.

**Daily Routine Cleaning:**

1. Remove soiled waste and lined and replace liners in hampers. Red liners are used for infectious waste and blue liners are used for lined.

Figure 5.15. Waste management equipments for OTh

**NOTE:** Do not clean OTh floor with dry mop (it make dust and causes activation of microorganisms that contaminate clean surfaces).

**NOTE:** Thorough cleaning is not neccessary between two operations, but perform cleaning as needed.
2. Wash kick buckets and replace liner with a fresh appropriately colored liner  
3. Wash OTH table, light, and all S/S furniture with germicidal solution  
4. Spot wash walls with germicidal solution  
5. Wet mop floor of the OTh suite with germicidal solution by using a micro fiber mop.

Night Cleaning:

6. Clean restrooms, lounges and locker rooms; clean and replenish toilet tissue and paper towels as needed.  
7. Clean all offices and support areas in the surgery and recovery areas.  
8. Wash all scrub and work sinks including under surfaces and drain pipes.  
9. Clean floors of all corridors, storage spaces between rooms, instrument clean-up rooms, sterile storage rooms, male and female locker rooms, offices and lounge areas

NOTE: All the spaces in OTh, sinks, walls, doors, windows, cabinets should be clean despite use of this area during 24 hours.  

NOTE: Terminal cleaning must be done in the end of each day, usually during the night shift

Surgery suites:

10. Remove all portable equipment from the room  
11. Wash all fixtures and items attached to ceiling with germicidal solution.  
12. Wash walls, doors, door frames, electrical outlets, rubber hoses, fixtures attached to walls, and outside surface of cabinets or shelves with germicidal solution  
13. Apply germicidal solution to entire floor surface, scrub mechanically, and pick up with wet vacuum  
14. Remove gross dirt from wheels, followed by washing with germicidal solution.

5.4. Dust and wet mopping of hard floors with microfiber mops (in rooms and hallways)

Purpose:  
The purpose of dust and wet mopping of hard floors is to ensure a systematic daily proper cleaning of floors in hallways and patient rooms.

Equipment: Micro fibers handle system, washable micro cleaning pads, wet floor signs, gloves, clean mop head, standard housekeeping cart, germicide or other floor cleaning solution.

Figure 5.16. Equipments for dust and wet mopping of hard floors
Procedure:

1. Pick up large debris and papers by gloved hand or using a broom and a dust pan and dispose in trash bag or cart.

Figure 5.17. Dust mopping of hard floors

2. Place micro fiber pad under the frame of the handle

Figure 5.18. Microfiber mop is the basic equipment for floor cleaning

3. Begin dust mopping the floor by placing Micro fiber duster on the floor and pushing forward along all corners and edges of the floor

4. Continue from corner of the room farthest from the door and push duster from left to right in “S” pattern

Figure 5.19. Wet mopping of the hallway’s floor
5. As the floor is dust mopped, move any furniture or items on the floor, sweep floor and return items and furniture to its proper place.
6. Be sure to include under and behind bed and furniture which cannot be moved, by pushing the duster and dirt to the doorway.

Figure 5.20. Wet mopping of the patient room floor

7. Remove the micro fiber pad from the duster by pulling on the tag or pulling on one side of the pad
8. The final step is to place used pad in a plastic or mesh bag.

5.5. Scrubbing hard floor surfaces (hallways)

Purpose:
The purpose of this action is to establish the proper procedure for scrubbing hard floor surfaces.

Equipment: Nutria-cleaner, dust pan and broom, low speed floor scrubber with drive block and a red or blue scrubbing pad, wet vacuum, clean wet mop, gloves, safety glasses, Wet floor signs, hand scrubber pad, and clean cloths.

Figure 5.21. Equipments for scrubbing the floors

Procedure:
1. Remove furniture from the area to be scrubbed, place wet floor signs down. If scrubbing a corridor, post signs and work on one half of the corridor at a time.
2. Set up the duster, mops and low speed scrubber.
3. Dust mop areas to be scrubbed
4. Dispense floor housekeeper into the scrubber. Fill the other bucket with clean water for rinsing.
5. Apply solution to the floor with the mop head saturated with the floor Nutria Cleaner.

**Note:** During the mopping process, always leave yourself a dry path to work from.

**Note:** Avoid splashing walls and doors with solution.
6. Pass the floor scrubber over the wet floor. Carefully heel and toe machine to pick-up black marks.
7. Pick up solution with wet vacuum machine
8. Rinse the floor with clean mop head saturated in clear cold water
9. Pick up rinse solution with wet vacuum machine
10. Check floor to assure cleanness, being sure no residue of solution remains on the floor. Repeat any steps necessary to complete operation.
11. Remove wet floor signs and replace furniture

Figure 5.22. Hallway floor after scrubbing procedure

Note: To avoid jams, it is preferred to scrub hallways during the night shift.
CHAPTER SIX. Trainings of the EVS personnel in hospital facilities

Cleanliness in hospitals is about more than just keeping the place clean. It makes a statement to patients and visitors about the attitudes of staff and managers EVS in terms of attention to detail, level of care and the way the hospital is organized and run. It is not possible to have a “good” hospital without being a clean and a tidy hospital.

Managers of EVS are taking the lead role in ensuring that cleanliness standards in the ward meet patient’s expectations and they are increasingly able to intervene and get things put right, where they are not. Also the development of the housekeeper as a part of the ward team, but previously they have to undergo trainings to provide safe and proper environment for patients and medical personnel as well. Although the environment serves as a reservoir for a variety of microorganisms, it is rarely implicated in disease transmission except in the immuno-compromised population.\(^\text{[33]}\) The principles of cleaning and disinfecting environmental surfaces take into account the intended use of the surface or items in patient care. Environmental surfaces carry the least risk of disease transmission and can be safely decontaminated using less rigorous methods than those used on medical instruments and devices.

New built and operating hospitals can improve patient outcomes and workplace safety, prevent illnesses, create extraordinary environmental benefits, and save money. Environmental hazards, pollution and emissions may be partially responsible for the nation’s epidemic of chronic diseases that require lifetime treatments and consume approximately 75% of all health care expenditures. Engaging in sustainable health care and in this regard the qualified and previously trained EVS staff are responsible and effective ways to protect the health of patients, staff and the community\(^\text{[34]}\). UCCK is facing a lot of problems, due to the health infrastructure as buildings, working conditions and medical equipment and also hospital capacities as human, technology maintenance are substandard.

6.1. Why trainings?

Since EVS in Kosovo’s hospitals are poor, substandard and may cause infections in patients and also the lifespan of the buildings, it is a matter of time that sends them to destruction, the previously trained staff would help in avoiding these two parameters. Until now nothing has been done in the matter of training of EVS personnel in general, because environmental issues are not considered as a factor that may cause infections and keeping the cleanliness in facilities in general is a simple matter.

On question nr. 27 made to the HCWs and administrative officials “Please indicate how do you agree with the following statement – EVS staff should undergo training constantly”, 90% of respondents strongly agreed%, 2% agreed, and 3% were neutral” (see figure 6.1)

\(^{[33]}\) CDC Guidelines for Environmental Infection Control in Health-Care Facilities 2003

\(^{[34]}\) [http://practicegreenhealth.org/initiatives/healthier-hospitals-initiative](http://practicegreenhealth.org/initiatives/healthier-hospitals-initiative)
The designed EVS training program equip new employees with the practical and technical skills essential in performing the daily responsibilities of an EVS worker. Once an employee completes orientation, they report to their assigned area where they are paired with a designated trainer, who has to provide two consecutive weeks of advanced one-on-one training. During this period, the new employee gets the opportunity to perform their daily tasks under the watchful eye of a skilled and knowledgeable trainer or its manager. At no point during this period is the employee allowed to work unsupervised. Only after they have satisfied the minimum requirements and have been approved by their supervisor are they permitted to work alone.

Training involves cleaning staff, compound by 50 employees that are divided in two groups as housekeepers and managers and work currently in UCCK, precisely in Surgery Clinic. Currently supervision of the cleaning processes monitored by the special commission assigned by the General Manager of the UCCK that consist of administrative staff, matron and EVS company representative. These people do not possess any kind of background in order to improve the maintenance or give any recommendations on this matter and current hygienic
situation is unpleasant. The maintenance staff needs to be trained in very common field of cleaning. EVS staff needs training to gain knowledge on cleaning skill; even these skills are very common ones. Also using the different equipments, as manual and motorized, and their polite and human behavior will be challenge in this training in order to offer protective and safe environment to the patients-people in need. Trainees will also demonstrate culture in their daily work by applying simple methods of behavior. Individuals that participate, needs to facilitate organization change, and they need to think in different way to drive results in the health sector.

That patients, visitors and HCWs engaged in UCCK are unsatisfied with engagement of EVS personnel therefore indicate trainings, much better is explained through questionnaire reply on statement in question no.31 and no.22. - “Unspecialized companies shouldn’t be engaged to conduct EVS in UCCK” figure 6.3.

Figure 6.3. “Unspecialized companies should not be engage to conduct EVS in UCCK” (Capstone project questionnaire, January 2012)


6.2. *Training needs*

To provide a functional effectiveness in order to decrease hospital associated infections’ rate in patients and lifespan of the building, the current hygienic maintenance must meet several key criteria. Those include:

- **Hygiene Criteria** - Using cleaning equipment, either manual or motorized, adequate disinfectants means.

- **Planning criteria** - The shape and size of the facilities should provide an optimal number of employees engaged in cleaning process which will maintain cleanliness of various numbers of spaces as patients’ rooms, laboratories, operation rooms, toilets, hallways, physicians’ rooms, drugstore etc.

- **Sustainability criteria** - By using appropriate and qualitative disinfectants and cleaning means the lifespan of the building (UCCK) is guaranteed for a certain period of time and no renovation is needed. Sustainable development is a necessity in modern buildings either a public, administrative or a health one. The principles of sustainability must be embedded in the lifespan of all the facilities.

- **Safety and security criteria** - Providing a safe and secure health environment firstly for patients and medical staff as well is a crucial element in health sector. GoK and MoH are responsible to provide additional financial means to fulfill these criteria. Threats can arise from lack of financial means that causes engaging improper maintenance companies and supervising personnel, not knowing to conduct the qualitative EVS and let consciously spreading the HCAIs in patients.

All these criteria as important steps in prevention of HCAI are introduction of validated processes for decontamination, cleaning of internal spaces, disinfection of soiled instruments and improving safety in operation rooms and other high risk areas.\(^{[35]}\) Regarding Kosovo, the Infection Control (IC) as a new discipline that was announced on 1999 shows that the overall rate of prevalence in UCCK is 17.4%, whereas in CICU the rate is 68.7%.\(^{[36]}\) Impressions of HCWS regarding EVS personnel are shown in figure 6.4.

Figure 6.4. “Impressions regarding engagement of EVS personnel and its managers in UCCK” (capstone project questionnaire, January 2012)

\(^{[35]}\) Rutala WA, Weber DJ. What clinicians need to know. Clinical infection diseases 2004 pg.39

\(^{[36]}\) Lul Raka, D Zoutman, Gjyle Mulliqi- Prevalence of nosocomial infection in the high risk units at the UCCK 2006, pg.27
6.3. Training time

Monday

09:00-10:00 Opening Session & Registration

Introductory Talks:

- “What are the problems of cleaning in hospitals, and how to solve them?”
- Safety and precautions during the cleaning process of hospital facilities
- Infection control prevention

10.00-10.15 Coffee/tea break
11:15-12:00 Lecture, discussions, Q&A, PPT Presentation
12:00-13:00 Lunch break
13.00-14.15 Lectures on maintenance and task understanding
14.15-14.30 Coffee/tea break
14.30-16.00 Group discussions and Q/A

Tuesday

09:00-10:00 Introductory lectures:
- Using of equipment in hospital facilities

10.00-10.15 Coffee/tea break
11:15-12:00 Lecture on:
- Using of disinfectants in hospital facilities
12:00-13:00 Lunch break
13.00-14.15 Simulation of participants and discussions
14.15-14.30 Coffee/tea break
14.30-16.00 Continuing of simulations and Q/A

Wednesday

09:00-10:00 Introductory lectures:
- Cleaning of the patients’ rooms

10.00-10.15 Coffee/tea break
11:15-12:00 Lecture on:
- Cleaning of inpatient and discharge rooms, PPT Presentations
12:00-13:00 Lunch break
13.00-14.15 Simulation of participants and discussions
14.15-14.30 Coffee/tea break
14.30-16.00 Continuing of simulations and Q/A
Thursday

09:00-10:00 Introductory lectures:
  • Cleaning of toilets and hallways
10.00-10.15 Coffee/tea break
11:15-12:00 Lecture on:
  • Cleaning of patients & public toilets and hallways and PPT Presentation
12:00-13:00 Lunch break
13.00-14.15 Simulation of participants and discussions.
14.15-14.30 Coffee/tea break
14.30-16.00 Continuing of simulations and Q/A

Friday

09:00-10:00 Introductory lectures:
  • Cleaning of OTh and emergency rooms
10.00-10.15 Coffee/tea break
11:15-12:00 Lecture on simulation method on disinfection of the medical equipment
12:00-13:00 Lunch break
13.00-14.15 Simulation of participants also lectures, discussions, Q&A, PPT Presentation
14.15-14.30 Coffee/tea break
14.30-16.00 Continuing of simulations and Q/A

6.4. Training plan

Booking of the space/Conference Room

Training is organized in Surgery Clinic premises for a week. There will be a seminar room for 50 participants free of charge.

Sound, media and manual equipment

Sound and media equipment, including static microphones, sound system, TV, monitors and CD player for 50 participants is 300.00€ per day.
Manual equipment, including mops, rugs, carts and motorized equipment for floor cleaning, for 50 participants is 200€ per day

• 5 days, Sound and interpretation equipment 300.00€ x 5=1500€
• 5 days, manual equipment for practicing 200.00€ x 5 =1000€

Conducting lessons

During the 5 (five) days period, the training and lessons are going to be conducted by 2 (two) trainers.

• Trainers per day - the price for one trainer is 150.00 € per day.
• Total for training costs – 150.00€ x 5=750€
Translation, copying and binding of training materials – (According to the prices written below)

- Translation of 40 pages = 400 €
- Copying: 40 pages x 50 copies = 100 €
- Binding of 50 copies = 50 €

**Total for Translation, Copying and Binding = 550 €**

- Translation of documents (English-Albanian) - 1 page = 10 €
- Printing - price per page (page printed on both sides) 0.02€
  - Binding one brochure = 1 €

**Lunch and coffee:**

**Lunch (sandwich):**

- Cost per person for 5 (five) days, will be 3.0€ x 50 participants x 5 days = 750.00€
- Cost of beverages: two coffees and two bottles of water cost/participant:
  - 1.0 € x 2/participant - 2.00€ x 50 participants = 100.00€

**Total for lunch and coffee = 850 €**

**Service assistance**

- Service assistance for 5 (five) days – 100.00€x5 days = 500.00€

**Total cost for 5 (five) days training= 5,150.00€**

**6.5. Anticipated outcomes**

An effective EVS program and training prevents the healthcare facility from becoming a reservoir of unwanted microorganisms by establishing regular cleaning schedules, outlining thorough and effective cleaning methods, preparing written policies and protocols. Since in Kosovo there is no any regulation regarding EVS in hospital facilities, the training should be oriented to CDC-Guidelines for Disinfection and Sterilization in Healthcare Facilities (37) and CDC and HICPAC Guidelines for Environmental Infection Control in Health-Care Facilities (38).

Awareness of the HCWs has to be ensured and updated in the form of regular educational and training activities. Not only that, patients and their relatives also have to be imparted awareness regarding infection control measures in order to break the transmission chain.

Healthcare infection control training should be a mandatory component of training at postgraduate and undergraduate level for HCWs and also imparted to all others coming in contact with patients or medical equipment (CDC, 2007). Training as a process that comprises increase of knowledge play a significant role on self-protection of HCWs and EVS staff as well in spreading the cross contamination in the clinics. Trainings must be more comprehensive on

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[38] CDC Guidelines for Environmental Infection Control in Health-Care Facilities 2003, page 71-80
contents of subjects and methods needed for application, where the CDC Guidelines on Environmental Infection Control in Hospital Facilities of 2003, as well as Hand washing and Hospital Environmental Control 1985 has to be part of conducted lectures.

In the estimation addressed to patients and visitors “Please indicate how do you agree with the following statement – “There are no guidelines for environmental services in Kosovo”, 30% of respondents strongly agreed, 50% agreed, 17% were neutral, and 3% disagreed” (see figure 6.5.)

Figure 6.5. “There are no guidelines for environmental services in Kosovo”, (Capstone project questionnaire, January 2012)

The anticipated outcome refers to the lessons learned during the trainings in which participants can perform and cooperate together for a successful job performance in order to protect internal hospital environment from becoming a reservoir of microorganisms.

Anticipated results are:

- Offering clean and protective environment to the patients in UCCK
- Facilitate the organizational change
- System thinking
- Trainees ability to demonstrate humanity in their daily work – not to laugh, not to speak loudly, behave politely and work silently,
- Think as patients – since patients are people that suffer from particular diseases the cleaning staff has to put themselves in their position,
- Building the trust between patients and EVS personnel – show willingness to assist with their needs
Beneficiary groups are:

- Patients in all clinics in UCCK
- HCWs in UCCK clinics
- Facilities within the UCCK campus

### 6.6. Estimations on conducted training

At UCCK it’s obvious that EVS are substandard which shows the illustration below (see figure 6.6.)

**Figure 6.6. Old and non-qualitative equipment of EVS cause substandard cleanliness in UCCK**

Manual cleaning equipment is kept unclean by EVS personnel

Unclean toilet in Surgery Clinic

Safety and preparation is the key of successful execution of the techniques learned during the training. My estimation after the conducted training for 50 employees is:

- Reduction of the cross contamination in UCCK clinics,
- Protection of internal hospital environment
- Proper use of equipment even of motorized and manual one
- Increase of self-consciousness in healthcare regarding proper EVS.

**Training involves the following cleaning staff working currently in UCCK**: 40 (forty) housekeepers and 10 (ten) managers
CHAPTER SEVEN - Finance and management of the project

Project finance is a method of financing major projects through “financial engineering”. Also as a technique it enables developing high profile projects and employing a carefully regulated financing mix. Project finance is a new financial discipline developed over the last 20 years that depends on a detailed evaluation of a project’s construction, operation, revenue risks and their allocation through contractual and other arrangements.

As a discipline Project Finance includes the logic of preparing the financial plan, risk assessment, fund-raising and affects all aspects of project’s development and contractual arrangements. It is important to note that project developers need to have basic understanding of how project finance works, and how their part is linked to and affected by the project finance structure.\(^{(39)}\)

In this chapter it will be discussed about the needed allocation of the budget in order to perform the appropriate EVS in UCCK and also the organizational hierarchy, proposed equipment such as motorized and manual ones for the EVS department. The purpose of this chapter is to explain the need to increase of the current budget that in continuance is allocated for EVS and UCCK in general which proved to be insufficient for proper performance of these services. The estimations of the budget proposal are based on current low allocation which causes substandard performance and sends to destruction and the environment is implicated in disease transmission, mostly among patients who are immunocompromised.\(^{(40)}\)

7.1. The idea and propose of the budget for EVS

For proper EVS in hospital facilities the allocation of sufficient budget is necessary for sustainable performance and decrease of HCAI and cross contamination among the patients and HCWs. Based on analyses of the current substandard situation in terms of internal environment protection in UCCK and research, two lines are proposed for funding and realization of this project which are as follows:

- Kosovo Budget
- Grants

7.2. Investment from Kosovo’s Budget

For implementation of the Capstone project “Procedures of Hygienic Maintenance and protection of the hospital environment” the significant percentage of the funds can be obtained from the Kosovo’s Budget. In Capstone project the budget allocation was planned for all required fields that are associated with EVS. The budget allocation is proposed as follows:

\[^{(39)}\] Principles of Project Finance by E.R. Yescombe 2002. Pg.5-6
\[^{(40)}\] Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)
- Number of engaged staff (tab.7.1)
- Salaries for EVS staff (tab.7.2&7.3)
- Manual equipments (tab.7.4)
- Motorized equipments (tab.7.5)
- Use of disinfectants (tab.7.6)

Table 7.1. Proposed EVS staff in UCCK based on clinics

<table>
<thead>
<tr>
<th>Clinics</th>
<th>Area (m²)</th>
<th>Managers</th>
<th>Housekeepers (specific areas)</th>
<th>Housekeepers (general areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gynecology</td>
<td>24000</td>
<td>3</td>
<td>14</td>
<td>50</td>
</tr>
<tr>
<td>Surgery</td>
<td>12863</td>
<td>2</td>
<td>10</td>
<td>42</td>
</tr>
<tr>
<td>Pediatric</td>
<td>7480</td>
<td>1</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Internal</td>
<td>11147</td>
<td>1</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Dermatology &amp; Chest</td>
<td>3658</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Infectology</td>
<td>6930</td>
<td>1</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Oncology &amp;Diagnostic Center</td>
<td>5550</td>
<td>1</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>3340</td>
<td></td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Orthopedic &amp; Orthoprotetic</td>
<td>4990</td>
<td></td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Otorhinolaryngology</td>
<td>4915</td>
<td>1</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Emergency Center &amp;ICU</td>
<td>1678</td>
<td>1</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Neurology &amp;Psychiatry</td>
<td>7768</td>
<td>1</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Institutions &amp; Drugstore</td>
<td>13906</td>
<td></td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Kitchen &amp; Lavatory</td>
<td>2270</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>115995</strong></td>
<td><strong>13</strong></td>
<td><strong>75</strong></td>
<td><strong>241</strong></td>
</tr>
</tbody>
</table>
Table 7.2. Current and proposed salaries for EVS/month in UCCK

<table>
<thead>
<tr>
<th>UCCK (m²)</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monthly payment (€)</td>
<td>EVS personnel</td>
</tr>
<tr>
<td>115.995</td>
<td>57,842,82</td>
<td>240</td>
</tr>
</tbody>
</table>

*Director of EVS, managers, and assistants are not calculated

Table 7.3. Proposed salaries of EVS/month based on job description

<table>
<thead>
<tr>
<th>Position</th>
<th>Director of EVS</th>
<th>Assistant (admin &amp; staff)</th>
<th>Managers</th>
<th>Housekeepers (specific areas)</th>
<th>Housekeepers (general areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>1</td>
<td>2</td>
<td>14</td>
<td>75</td>
<td>241</td>
</tr>
<tr>
<td>Salary (€)</td>
<td>500</td>
<td>300</td>
<td>350</td>
<td>300</td>
<td>250</td>
</tr>
<tr>
<td>Total (€)</td>
<td>500</td>
<td>600</td>
<td>4,550</td>
<td>22,500</td>
<td>60,250</td>
</tr>
</tbody>
</table>

88,450.00

Table 7.4. Proposed manual equipments for EVS Unit

<table>
<thead>
<tr>
<th>Housekeeping Cart</th>
<th>Microfiber mops</th>
<th>Chromium handle</th>
<th>Microfiber clothes</th>
<th>Buckets (for linen)</th>
<th>Buckets (for trash)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>280</td>
<td>10/housekeeper</td>
<td>1/</td>
<td>10/housekeeper</td>
<td>316</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prices (€)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>42000</td>
<td>15,800</td>
<td>3,160</td>
<td>12,640</td>
<td>9,480</td>
<td>9,480</td>
</tr>
</tbody>
</table>

64,560.00
Table 7.5. Proposed motorized equipments for EVS Unit

<table>
<thead>
<tr>
<th>Vacuum carpet cleaner</th>
<th>Window cleaner</th>
<th>Ceramic tile vacuum cleaner</th>
<th>Polishing and buffing machine</th>
<th>Scrubber dryer</th>
<th>Sweeper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>18</td>
<td>20</td>
<td>3</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Prices (€)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>100</td>
<td>120</td>
<td>2,000</td>
<td>1,500</td>
<td>5,000</td>
</tr>
<tr>
<td>2100</td>
<td>1,800</td>
<td>2,400</td>
<td>6,000</td>
<td>21,000</td>
<td>25,000</td>
</tr>
<tr>
<td><strong>58,300.00</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7.6. Proposed disinfectants for EVS /month

<table>
<thead>
<tr>
<th>Alcoholic dispenser</th>
<th>Liquid soap (litre)</th>
<th>Disinfectants for common areas (litre)</th>
<th>Disinfectants for high risk areas (litre)</th>
<th>Toilet paper (pcs)</th>
<th>Paper hand rub (pcs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>70</td>
<td>900</td>
<td>600</td>
<td>1500</td>
</tr>
<tr>
<td>Price (€)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>0.40</td>
<td>0.50</td>
</tr>
<tr>
<td>1000</td>
<td>350</td>
<td>6,300</td>
<td>5,400</td>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td><strong>14.650.00</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The idea for financing the EVS from KB came from the general overview of the current situation in this matter conducted in UCCK for a long period of time. Regarding financing these services in hospital facilities, i.e., in UCCK, there is tendency of increase of the value in years which has proved that they are insufficient upon the services that are performed, companies engaged and manager’s surveillance. For improving and increasing the budget allocation it is necessary to begin by asking this question: Why do we care about EVS in hospitals? Proper budget allocation is needed because EVS is an integral part of the hospital team, and its work directly affects not only the daily operations of the hospital, but also the most important deliverables: satisfaction and outcomes.
Table 7. 7. Percentage of budget allocation for EVS in UCCK from 2007-2011

<table>
<thead>
<tr>
<th>Description</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCCK budget (€M)</td>
<td>21,228,032</td>
<td>15,661,872</td>
<td>18,698,033</td>
<td>20,747,645</td>
<td>23,737,276</td>
</tr>
<tr>
<td>UCCK budget on EVS</td>
<td>799,778</td>
<td>481,656</td>
<td>665,843</td>
<td>810,550</td>
<td>953,643</td>
</tr>
<tr>
<td>%</td>
<td>3.76</td>
<td>3.00</td>
<td>3.56</td>
<td>3.90</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Source: Financial Unit in UCCK

Table 7.8. Proposed budget allocation for EVS in UCCK

<table>
<thead>
<tr>
<th>Description</th>
<th>Salaries (€)</th>
<th>Manual equipments (€)</th>
<th>Motorized equipments (€)</th>
<th>Desinfectants (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td>88,450</td>
<td></td>
<td></td>
<td>14,650</td>
</tr>
<tr>
<td>Yearly</td>
<td>1,061,400</td>
<td></td>
<td>64,650</td>
<td>58,300</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>175,800</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>1,360,150</strong></td>
</tr>
</tbody>
</table>

7.3. Investments from grants

The second idea for financing the EVS in hospital facilities, i.e. in UCCK is through grants. Since in Kosovo less attention is paid to this issue and until now neither of the governments established since 2002 showed any will, at least, to increase the budget allocation for MoH the future direction on this matter has to be directed toward WHO office in Kosovo.
CHAPTER EIGHT – Final Discussion & Recommendations

In this chapter are presented previous discussions and researches regarding EVS in hospital facilities with the main focus in UCCK as the only tertiary health care institution in Kosovo. Also which are the ongoing problems of an uncontrolled internal environment in hospital facilities that reflects a lack of poor infection control are introduced in chapter eight. The impact on patients and medical staff engaged in UCCK and hospitals in general is summarized in this chapter. Likewise the durable part of final discussion are the needed procedures that are task of the moment to be undertaken in order to improve EVS and increase protection of the internal environment in hospital facilities.

8.1. Final discussion

As a South East European country, Kosova together with Albania, Bosnia and Herzegovina, Montenegro, FYR Macedonia and Serbia (as former Yugoslavian republics) has undergone significant transitions in the past two decades that have been associated with serious armed conflict. After the NATO strikes happened from 1999 until 2011, Kosovo went into transition. The initial phase after the conflict of 1999 focused on reconstruction which proceeded with the enhancement of economic growth and employment creation. Kosovo’s current aspiration is to increase number of official recognitions after the Declaration of Independence on 17th of February 2008 and to join the European Union that exerts an important impact on political decisions.

In the healthcare sector, the main challenge is to reach specific healthcare system objectives (Health Sectorial Strategy 2010-2014). Regarding EVS in hospital facilities the capstone project explored the major challenges to achieve sustainability in this matter. To EVS was given less attention than was needed due to other major obstacles. The capstone project highlighted the lack of financing of the health sector during the past years and the poor engagement of MoH on establishing sustainable infection control units in all regional hospitals separately with the main focus on UCCK. Major steps were undertaken in terms of policy making by establishing the Kosovar Council for Prevention and Control of HCAI within the MoH. It is an executive body to combat this modern challenge of healthcare, and enacting an Administrative Instruction No.05/2011 for Prevention and Control of Hospital Infection. There was no research on infected patients in UCCK clinics done since 2006. These mean that infection control was still in its infancy. Engagements were limited to passive monitoring activities, and actions are only initiated as a response to recent outbreaks. Within the UCCK and some regional hospitals, hospital infection control councils excised solely on paper.

The Medium Term Expenditure Framework 2012-2014, served as the main planning document of the GoK, emphasizing that the improvement of quality and efficiency of health services and at the same time the improvement of health status was one of the strategic priorities of Government. According to this document, out of the total Kosovo Budget 2011, € 280,48 Million, or roughly 26.40% of the budget has been allocated for the Social Wealth-fare and Health Sector which include the Ministry of Social Wealth-fare and Ministry of Health. To the MoH in continuance were allocated the amount of approximately 6%-7% of
the total budget (€79,079.23 in 2011), which upon the current situation on healthcare sector shows that it is an insufficient allocation for achievement of the determined objectives that are as follows:

- Reducing morbidity and mortality of the general population,
- Improving management of existing resources and service quality, fulfillment of the existing infrastructure of health compatible with European standards
- Implementation and development of Health Information System/HIS
- Establish a sustainable funding system for the health sector

According to the WHO Report of 2006, expenditures for health in Kosovo compared with expenditures in neighboring countries, such as Albania, Serbia, Macedonia, Bosnia&Herzegovina, Montenegro and EU states were the lowest (Figure 2.6). Expenditures for the health sector in Kosovo were just 3.8% of GDP, which comparing with expenditures in neighboring countries, as Albania, Serbia, Macedonia, Bosnia&Herzegovina and Montenegro are again the lowest in region (Fig. 2.7). Even in the recent years there is a trend to increase allocation of finances from government to health sector, they seem to be insufficient.

The study for capstone project was conducted at UCCK in Prishtina, a city with 200,000 inhabitants (Census on April 2011) with 2109 beds and with approximately 500,000 admissions per year which serves as the only tertiary healthcare center for a population of 1,733,872 million. Approximately 2000 different surgical interventions were performed monthly at the UCCK. Regarding EVS in hospital facilities, the allocated budget of 0.04% or 0.96€-1.90€/per patient admitted is so insufficient that the outbreak of infections is an understandable outcome. Overall hygiene in the UCCK facility required steps yet to be determined for immediate changes (Tab.2.3). Also capital investments at UCCK take considerable budget which from 2010-2012 undergoes decline from 7.8%-3.4% and has impact in overall appearance of UCCK in general (Tab.2.5. & Fig. 2.9). These two components in association with improper technical maintenance send in the degradation and destruction of existing hospital facilities.

Materials and methods used for research were two types of questionnaires submitted to HCWs (physicians, nurses and technicians) and patients in order to have an overview of current internal environmental situation in UCCK which together with respondents’ impression are a good parameter of steps and action needed to be undertaken to improve the situation which in Chapters 2&3 is shown through the photos.

The major concerns from the HCWs and patients regarding EVS are illustrated in Figure 7.3. and Figure 7.8 which are:

- Bad motorized and manual equipments, unqualified housekeepers and hallways, uncollected linen and waste as well as unclean toilets based on HCWs
- Clinics of gynecology, CICU, surgery, oncology based on patients and visitors.
A comprehensive approach to professional development and appropriate capacity building is required to occur twice a year. Project findings show the need for basic trainings for EVS staff, since the performance of housekeepers happened to be insufficient, due to engagement of unprofessional companies. In Chapter 5 were explained the need of conducting training for EVS staff and its schedule associated with sessions and lectures in order to provide proper EVS along hospital wards. It is suggested that managers and housekeepers, participate in accordance with their scope of work and engagement within clinics.
The main focus in this Capstone project is to consider issues related to the good practices of other countries in region of Balkan. Also, the experience of other countries, particularly the USA, shows that the key to providing proper EVS in hospitals are basic procedures which include environmental surfaces that are usually associated with diseases. These procedures, explained in Chapter 4, must exist within facility policies in order to protect transmission of infections to either staff or patients. Cleaning procedures, as the outcome of the project, are divided in several areas as:

- Standard patient room cleaning procedures
- Discharge room cleaning procedures
- Operation room cleaning procedures
- High dusting, mopping and scrubbing of hard floor cleaning procedures.

Chapter 7 as the last one analyzed replies from questionnaires conducted with 200 medical staff and patients. Unfriendly internal environments and poor hygiene was the top of ranked reasons that the questionnaires considered. The results showed that HCWs and patients, express their hesitation on improvement of the current situation in UCCK and hospitals in general, out of which 97% of HCWs has bad impression on EVS. According to the project survey, most required actions that UCCK management needs to undertake to reduce the HAI rate are:

- Disinfectants, prior to their use have to be licensed (42% strongly agree and 50% agree)
- Medical personnel should provide suggestions to EVS (57% strongly agree and 40% agree)
- Establishment of cooperation among EVS and Infection control Unit (43% strongly agree and 52% agree)

Also, HCWs were asked also about the steps that UCCK management should undertake in order to improve EVS and replies are as follows:

- 53% strongly agree and 44% agree that engagement of specialized companies are necessary
• 51% strongly agree and 22% agree that adoptions of EVS practices from hospitals in region should be considered
• 42% strongly agree and 58 agree that a hygiene control unit should be established

Patients overwhelmingly rate the level of their care higher when good communication among patients, doctors, nurses and support staff is present. Patients’ opinions on EVS personnel unprofessionality reached the rates of 40% and 42%. As long as housekeeper’s daily activities on cleaning toilettes, as the most sensitive areas are concerned, 82% strongly disagree and 16% agree on their poor engagement. Not surprisingly 83% of respondents strongly agree and 13% agree that managers, patients, and visitors are insufficiently engaged as far as maintenance of overall hygiene is considered.

One of the most objective ways to measure the effectiveness of EVS and proper care is to consider patients’ preferences after they are discharged from hospital. These impressions are as follows:

• No recommendations of UCCK: 69% strongly agree, 12% agree and 10% are neutral on this matter
• Preference of private hospitals if current situation remains the same: 79% strongly agree, 19% agree and 4% neutral
• Continuation of the same EVS performance in UCCK: 84% strongly disagree and 16% disagree.

In conclusion UCCK management and MoH should make serious efforts to improve obstacles identified by these questionnaires: Obstacles identified further include:
1) Engage professional companies on conducting EVS
2) Provide training for EVS staff
3) Increase surveillance
4) Build special hygiene control unit
5) Empower infection control units and
6) Establish cooperation among these two units

8.2. Recommendations

In such a complex internal environment as in UCCK, the proposed recommendations needed for its improvement are:

Recommendation 1

Compile a strategy plan for functioning of UCCK. This includes: strategies for infrastructure, staff, equipments, and supply with medical disposal material. The Sector Strategy 2010-2014 has been already compiled for MoH which deals with the health sector in general, hence the Strategy Plan for UCCK will determine development of each sector within UCCK particularly.

Recommendation 2

Increase the allocation of the budget of MoH. This includes: budget allocation for UCCK and 5 regional hospitals in Kosovo. New budget allocations would be focused on capital investments and EVS in hospital facilities across all hospitals in Kosovo.
**Recommendation 3**

*Increase of building capacities of hospital facilities.* This includes: creating waiting area for visitors in order to avoid mixing them with medical staff and prevent cross contamination especially in Emergency Centers. Moreover, the CICU sometimes known as critical care unit, is situated in the hallway between the Emergency Center and the Surgery Clinic (SC). There is an immediate need of changing the place of this ward within SC due to the lack of proper access of medical staff that is mixed with visitors all the time. Furthermore the main obstacle in term of design is position of sanitation in all 18 clinics which may be treated as a public one. All patient rooms must have access to their own sanitation.

**Recommendation 4**

*Contract only specialized companies to handle EVS.* The crew that performs EVS in hospitals must be previously trained in specialized agencies in order to offer the proper and required services. Trained personnel provide appropriate services in different areas of hospitals. Since the area of UCCK is large and overextended encouragement of competition among different companies will be an overwhelmingly good measure toward competitiveness among companies, which in overall will offer better service.

**Recommendation 5**

*Establish a special Environmental Service Unit.* As EVS is monitored by matrons’ of each clinic separately and taking to account their daily engagements, forming of a special unit is necessary. It will monitor and survey the hygiene process in all clinics, among that the proper use of equipment, disinfectant and development of daily action plans.

**Recommendation 6**

*Preliminary inspection of disinfectants in National Institute of Public Health.* Since UCCK uses uncertified disinfectants with no measurement of quantity of ingredients, prior verification of the used items would decrease possibility of contamination of the internal environment.

**Recommendation 7**

*Empowerment of the Infection Control Unit.* Previous chapters analyze the lack of information regarding infection control in UCCK and the factors that cause it. By empowering the unit and increase of the infection control preventing the general situation would be feasible for further steps needed to undertake in order to decrease HAI in UCCK.

**Recommendation 8**

*Providing continuous trainings for EVS staff.* Trainings are the basic step for development of activities so its staff would benefit by the improvement of current poor hygienic situation in UCCK.
Recommendation 9

To further invest in order to fully use the capacities of UCCK. The largest hospital centre in the country, despite being busier than other hospitals, does not utilize its capacities fully. It is estimated that UCCK works at around 70% capacity. For every 100 beds in the UCCK, around 70 are in continuous use; there are always free beds in the centre and immediate requirements on heating, cleaning, staffing, maintenance, would improve current substandard situation.

Recommendation 10

Prevent unnecessary incoming and outgoing visitors in hospitals: Respect of visiting hours with the aim of providing protection from intra-hospital infections.
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(33) CDC and Prevention guidelines for Environmental Infection Control in Hospital Facilities http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm

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http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm
Appendix 1. QUESTIONNAIRE FOR PATIENTS AND VISITORS

1. Gender  Male □, Female □

2. Age  a) < 20-29;  b) 30-39;  c) 40-49;  d) 50-59;  e) 60 +

3. Level of Education : (MBA /MSc) □, BSe □, High school □

4. In which clinic you are admitted (being treated)?

___________________________________________________________

5. Please indicate your impressions regarding hospital EVS:
   a) Poor       c) Good
   b) Satisfactory  d) Excellent

6. What EVS problems are you facing when admitted in the hospital?
   a) Hygienic equipments (buckets, rugs, mops, hallway’s cleaning machines)
   d) Unclean patients room
   e) Dirty toilets
   f) Uncollected waste
   g) Uncollected linen
   b) Unprofessional housekeepers
   c) Uncleaned hallways

7. Have you been satisfied with EVS offered in UCCK:
   Yes □, No □

8. If you have answered with YES the question 7, please write down which services satisfied you:
   a) Hygienic equipments (buckets, rugs, mops, hallway’s cleaning machines)
   d) Waste collection
   b) Housekeepers
   e) Linen collection
   c) Cleanliness of internal spaces
      (hollways, toilets, patient’s rooms)

8. If you have answered with NO the question 7, please write down which services didn’t satisfy you:
   a) Hygienic equipments (buckets, rugs, mops, hallway’s cleaning machines)
   c) Cleanliness of internal spaces
      (hollways, toilets, patient’s rooms)
   b) Housekeepers
   d) Waste collection
   e) Linen collection
9. How can you categorize the behavior of the housekeepers?  
   a) Poor  
   b) Enough  
   c) Good  
   d) Excellent  

10. How can you categorize the overall cleaning process of the housekeepers?  
    a) Poor  
    b) Enough  
    c) Good  
    d) Excellent  

11. How can you categorize the overall surveillance process of the managers?  
    a) Poor  
    b) Enough  
    c) Good  
    d) Excellent  

12. What are the best aspects of the housekeepers you have seen?  
    a) Readiness to work  
    b) Communication with patients  
    c) Good use of equipments (bucket, rug, mop, hallway’s cleaning machines)  
    d) Good use of sanitizer  

13. What are the worst aspects of the housekeepers you have seen?  
    a) Lack of readiness to work  
    b) Improper use of equipments (bucket, rug, mop, hallway’s cleaning machines)  
    c) Lack of communication with patients  
    d) Improper use of sanitizer  

14. Please indicate the extent to which you agree with the following:  

<table>
<thead>
<tr>
<th>If the specialized companies will be engaged</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Internal spaces will appear more friendly and clean</td>
<td></td>
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</tbody>
</table>

15. Please indicate the extent to which you agree with the following:  

<table>
<thead>
<tr>
<th>If the internal hygiene is similar in state as in private hospitals</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
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<tr>
<td>2. Patients will feel safe going to the state hospitals</td>
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</tbody>
</table>
16. How clean were the areas where you were treated in the hospital:
   a) Extremely clean       c) Slightly clean
   b) Very clean            d) Not clean at all

17. How clean was your room or the sleeping space in the hospital:
   a) Extremely clean       c) Slightly clean
   b) Very clean            d) Not clean at all

18. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Housekeepers in UCCK are unprofessional</td>
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</table>

19. Please indicate how do you agree with following statement:

<table>
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<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Current hygiene in UCCK is substandard</td>
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20. Please indicate how do you agree with following statement:

<table>
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<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tr>
<td>5. EVS in hospitals should remain the same</td>
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21. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Unspecialized companies should not be engage to conduct EVS in UCCK</td>
<td></td>
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22. Please indicate how do you agree with following statement:

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<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tr>
<td>7. UCCK should enforce penalties for unprofessional EVS companies</td>
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23. Please indicate how do you agree with following statement:

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<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</thead>
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<tr>
<td>8. Insomuch EVS are as current I prefer private clinics</td>
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24. Please indicate how do you agree with following statement:

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<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Poor EVS (as current) may cause infection at patients</td>
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</table>

25. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Housekeepers must clean the toilets often</td>
<td></td>
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</table>

26. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. EVS managers must monitor housekeepers often</td>
<td></td>
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</table>
27. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Qualitative disinfectants are not used in UCCK</td>
<td></td>
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</table>

28. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>I do not recommend UCCK to my family and friend</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

29. Is there any other issue that is not discussed:
   a. Yes
   b. No

   **Comment:**

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
Appendix 2. QUESTIONNARE FOR HEALTHCARE WORKERS

1. **Gender**  Male ☐, Female ☐

2. **Age**  a) < 20-29; b) 30-39; c) 40-49; d) 50-59; e) 60 +

3. **Level of Education** : (MBA /MSc) ☐, BSe ☐, High school ☐

4. **Position:**
   a) Physician,  
   b) Nurse,  
   c) Technician,  
   d) Administrative Official

5. **Please indicate how many years you practice as physician/technician/nurse/administrative official:**
   a) Under 1 year  
   b) 1-5 years  
   c) 6-10 years  
   d) 11-25 years  
   e) 16-20 years  
   f) Over 20 years

6. **What problems of EVS you are facing in UCCK?**
   a) Non-quality hygienic equipments  
   b) Unqualified housekeepers  
   c) Unclean hallways  
   d) Unclean patient’s rooms  
   e) Dirty toilets  
   f) Uncollected waste  
   g) Uncollected linen

7. **Are you satisfied with EVS offered in UCCK?**
   Yes ☐, No ☐

8. **If you have answered with YES the question 7, please write down with which EVS you are satisfied:**
   a) Hygienic equipments (buckets, rugs, mops, hallways’ cleaning machines)  
   b) Housekeepers’ engagement,  
   c) Waste collection  
   d) Cleanliness of internal spaces (hallways, toilets, patients’ rooms)  
   e) Linen collection
9. If you have answered with NO the question 7, please write down with which EVS you are unsatisfied:
   a) Hygienic equipments (buckets, rugs, mops, hallways’ cleaning machines)
   b) Housekeepers’ engagement,
   c) Waste collection
   d) Cleanliness of internal spaces (hallways, toilets, patients’ rooms)
   e) Linen collection

10. Does previous companies (after 2000) engaged in UCCK have provide more qualified services?
   Yes ☐  No ☐

11. Please indicate the extent to which you agree with the following:

<table>
<thead>
<tr>
<th>1. Proper environmental services will be eligible in hospitals</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

12. Please indicate the extent to which you agree with the following:

<table>
<thead>
<tr>
<th>2. Internal hospital environment will appear more friendly</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

13. Please indicate the extent to which you agree with the following:

<table>
<thead>
<tr>
<th>3. The internal spaces in UCCK will be more clean and safe</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

14. Please identify 3 main advantages of current environmental services is UCCK

<table>
<thead>
<tr>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There is much clean if no company engage</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
</tbody>
</table>
Please identify 3 main disadvantages of current environmental services in UCCK

<table>
<thead>
<tr>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No proper surveillance</td>
</tr>
<tr>
<td>2. No using of certified disinfectant products</td>
</tr>
<tr>
<td>3. Possibility of spread of infections</td>
</tr>
</tbody>
</table>

15. How can you categorize the daily engagement of the housekeepers?
   a) Poor  
   b) Enough  
   c) Good  
   d) Excellent

16. How can you categorize the overall cleaning process in UCCK?
   a) Poor  
   b) Enough  
   c) Good  
   d) Excellent

17. How can managers of environmental services improve in UCCK?
   a) Increase of budget  
   b) Undergo training  
   c) Has prior experience  
   d) Increase no. of managers

18. Please indicate how do you agree with following statement:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The environmental services in hospitals are substandard</td>
<td></td>
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</table>

19. Please indicate how do you agree with following statement:

<table>
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</thead>
<tbody>
<tr>
<td>2. There are no guidelines for environmental services in Kosovo</td>
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</tbody>
</table>

20. Please indicate how do you agree with following statement:

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</thead>
<tbody>
<tr>
<td>3. Poor EVS may cause spread of infections at patients</td>
<td></td>
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</tbody>
</table>
21. Please indicate how do you agree with following statement:

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</thead>
<tbody>
<tr>
<td>4.</td>
<td>Hygienic equipments (buckets, rugs, mops, hallways’ cleaning machines) are old</td>
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22. Please indicate how do you agree with following statement:

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</thead>
<tbody>
<tr>
<td>5.</td>
<td>Disinfectant means prior to use has to be verified and licensed</td>
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</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Infection control unit in UCCK is inefficient</td>
<td></td>
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</table>

24. Please indicate how do you agree with following statement:

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<tbody>
<tr>
<td>7.</td>
<td>Cooperation among EVS and infection control unit has to be established</td>
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25. Please indicate how do you agree with following statement:

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<tbody>
<tr>
<td>8.</td>
<td>Current design of the hospital facilities is substandard</td>
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</thead>
<tbody>
<tr>
<td>9.</td>
<td>EVS personnel have to conduct training constantly</td>
<td></td>
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</tbody>
</table>

27. What kind of training has to be conducted for improvement of EVS?
   a) Use of equipment (manual and motorized)
   b) Use of disinfectants
   c) Basic infection control prevention
   d) Cooperation with patients

28. Please indicate how do you agree with following statement:

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<tbody>
<tr>
<td>10.</td>
<td>UCCK management has to use EVS practice from other hospitals in region</td>
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29. Please indicate how do you agree with following statement:

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<tbody>
<tr>
<td>11.</td>
<td>UCCK management has to establish especial hygiene control unit</td>
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30. Please indicate how do you agree with following statement:

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<tbody>
<tr>
<td>12.</td>
<td>Unqualified EVS companies should not be engaged</td>
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31. Please indicate how do you agree with following statement:

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<tbody>
<tr>
<td>13.</td>
<td>HCWs should provide suggestions regarding EVS provided in UCCK</td>
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32. Please indicate how do you agree with following statement:

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</thead>
<tbody>
<tr>
<td>14. Government has to increase budget for hygiene at hospitals</td>
<td></td>
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</table>

33. How much do you think (estimate) is spend in EVS for each patients admitted in UCCK/1 year.

a) Less than 10 cents  
b) 11 – 25 cents  
c) 26 – 50 cents  
d) 50 cents – 1.0€

e) 1.0€- 2.0€  
f) 2.0€– 5.0€  
g) 5.0€ – 10.0€  
h) 10.0 €– 50.0€

Comments:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Appendix 3. Environmental services’ equipments for hospitals

**Sweeper** - Advance SR 1000S works fast, is very compact and maneuverable. Comes in either a battery or petrol version for indoor work and is durable to withstand tough working conditions. Sweeper Advance SR 1000S is small enough to fit into an elevator, and maneuverable enough to reach the tight corners.

- Theoretical productivity rate of 5,500 m² per hour
- It turns in less than 2 m
- 3 m² of panel filter, 50 l of hopper capacity with a climbing ability up to 16%, and other top performance features.

**Scrubber dryer** SC350 - is the first compact unit able to clean in all directions going either forward or backwards, while the water is kept inside the brush deck while working. Cleans even hard to reach areas that are inaccessible to typical scrubber/dryers

- Low noise level enables daytime cleaning, even in noise sensitive locations
- Standard on board charger
- 27 kg of down pressure for excellent scrubbing effectiveness.
Procedures of Hygiene Services and protection of the hospital environment

Polishing and buffing machine - is powered by a 1.5 HP motor with twin capacitors. The A.C. style motor is rated to run up to five times longer than our normal that comes with shock proof wheels for less bouncing, and a wide wheel base for easy start-up! Fixed handle allows for simple operation, and no unnecessary wear on the motor. Comes standard with a 3 year limited warranty on parts and workmanship. It is excellent for floor polishing in hospitals and school facilities.

Ceramic tile vacuum housekeeper - Wet & Dry Vacuum
Housekeeper 16 liter (12 liter capacity) stainless steel, 1100W, 45 l/s, 220/240V
Tool Kit:

- 3 m hose,
- 2 suction tubes, floor tool, upholstery tool, crevice tool,
- squeegee tool, 8.5 kilos
Code GH330

Window vacuum housekeeper - a quick and easy window cleaning, with water recovery system picks up dirty water before it drips. The WV50 cleans windows hygienically in a 3-step cleaning process: spray, wipe and vacuum without leaving streaks. This machine is re-chargeable cordless, which makes it easy to use and extremely versatile. Suitable for different, surfaces: windows, roof lights, ceramic tiles in the bathroom Glass surfaces as glass door, table, shower cabins. Water tank: 100ml and cleaning area 25-30sqm. Working width: 280mm.
Procedures of Hygiene Services and protection of the hospital environment

**Carpet cleaner** – with 1400 watt suction power are ideal for the best carpet cleaning. Spray solution to the carpet with pump, also special tools for upholstery. All water spraying hose connections have stainless steel sockets. It’s the best option for environmental services and cleaning companies.

**Housekeeping cart** – is constructed of reinforced, smooth walled plastic with rounded corners to protect walls and doorways. Compartments and hooks organize equipment, supplies and more. Zippered yellow vinyl bag makes trash removal quick and easy. These carts include three shelves to hold additional supplies and an extended bottom shelf for a mop bucket.

Microfiber mop – possess excellent characteristics for absorption for dust and water with size: 42 x 17 cm. Mostly microfibers are made from polyesters, polyamides. Strip shape with more friction for cleaning and special clean effects and durable. It is designed specifically for damp mopping of the hard floors in schools and hospital facilities due to high frequency.
Chromium mop handle - is 4" wide by 16.5" long. The telescoping mop handle extends to 70". To protect baseboards and furniture while cleaning, the microfiber pads are slightly larger than the mop head. This thick microfiber pad attaches to the mop head with velcro and will clean any type of surface with just water.

**Microfiber clothes** - are selected for specific characteristics as: softness, durability, absorption, water repellency, and filtering capabilities. In hospital facilities clothes are used upon the high risk areas of applications. For low risk even high risk areas (OTh, bad rails, door handle) cleaning applications are designed for repeated use rather than being discarded after use. Dimension are 20x20cm or 25x25cm.

**Personal Protective Equipment (PPE)** is specialized clothing or equipment worn by an HCWS and EVS staff for protection against infectious materials during the job performance. PPE includes gloves, gowns, shoe covers, head covers, masks, face shields are disposable until and goggles are reusable. PPE should be worn during cleaning process of in high risk areas as OTh, isolation rooms, toilets.