Protocol

Surveillance of alcohol hand rub use in hospitals
HAND-KISS-S
HAND-KISS-F

© National Reference Center for Nosocomial Infection Surveillance at the Institute for Hygiene and Environmental Medicine Charité – University Medicine Berlin

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1. Introduction

Regular and careful hand hygiene (HH) with an alcohol-based hand rub is indisputably one of the most important measures for nosocomial infection prevention. A low degree of compliance remains a problem, however [1], [2].

Increasing compliance by changing behavior can be supported by a concept for learning on individual and organizational levels. A basic requirement is the use of feedback information that encourages discussion of the subject. This kind of information can be generated by direct observational studies on HH frequency or by measuring alcohol hand rub (AHR) usage. Observational studies are very costly, however, and almost impossible to complete in some areas. The use of AHR is comparatively easy to measure and is an indicator quickly accessed in order to present the frequency of hand disinfection [3]. Table 1 provides an overview of the two methods for determining hand disinfection compliance.

Table 1: Methods for determining HH compliance

<table>
<thead>
<tr>
<th></th>
<th>Direct: Observation of HH frequency</th>
<th>Indirect: AHR use as indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Direct determination of number of completed HH actions</td>
<td>A surrogate parameter: Calculation of completed HH actions from AHR use per patient day</td>
</tr>
<tr>
<td>Implementation</td>
<td>High personnel costs and time expenditure; can only be performed prospectively</td>
<td>Simple to perform with low time expenditure; retrospective surveillance is possible</td>
</tr>
</tbody>
</table>
| Validity | • Hawthorne effect on announced observations  
          • Anonymous observation is hardly possible  
          • Accidental effects during short observational periods  
          • Only few patients/workers are included | • Typical indicator  
          • Sensitivity good, specificity limited  
          • Overestimation is possible when AHR is used for other purposes  
          • Dependent on the quality of usage data collection |
| Usability | Appropriate for risk areas (ICUs) or to validate the results of indirect compliance studies | Appropriate for determining the situation of an entire hospital |

However, little is known about the minimum number of HH actions necessary to achieve 100% compliance across different departments and with different groups of patients. Current observational studies show that compliance rates around 50% in German hospitals.

For this reason, HAND-KISS has the goal of stimulating compliance improvement by comparing AHR usage of units and functional areas with similar patient groups. Participating medical facilities transfer their AHR usage data yearly to the National Reference Center for the Surveillance of Nosocomial Infections (NRZ). Together with the other
information required to compute usage rates, these data allow for an evaluation of average AHR usage and by extension the frequency of HD.

In addition, the data of all participating units, functional areas and outpatient centers can be summarized over the entire time period to provide reference data for comparison. AHR usage is stratified by functional areas and/or station (i.e. by intensive or non-intensive care unit and by medical field) in order to take the patients’ underlying illnesses into account.

Because stratification takes predisposing factors and exposure-related risks and thereby the frequency of necessary HD into account, differences between hospitals and over time can provide evidence about compliance changes that should then be investigated further.

2. Goals of the surveillance protocol
This protocol has the primary goal of providing participating facilities with the necessary specifications and definitions to standardize data collection and analysis.

It has the secondary goal of allowing interested facilities to collect and analogically analyze data according to these definitions and specifications. They can then benchmark themselves with other facilities based on the reference data.

All comments about further necessary specifications and explanations are welcome.

3. Requirements for participation and obligations of KISS institutions

Participating facilities must fulfill the following requirements:

- Head of facility or department must agree to participation in the project
- Strict application of the obligatory definitions and specifications found in this protocol
- Data collection and transfer by webKess (EDP program)
- Preparedness to share descriptive parameters (structural and process parameters of the unit/area and of the hospital, e.g. number of beds)
- Preparedness to complete internal quality assurance measures upon appropriate surveillance results
- Preparedness to participate in validity measures

KISS institutions promise participants to:

- Support and advise them during surveillance
- Handle data confidentially
- Enable participants to analyze their own data
- Provide advice on the implementation of surveillance results for quality management

4. HAND-KISS Methods

Hospitals are differentiated into inpatient care (wards with beds) and functional areas (wards without beds).

4.1 Inpatient care (HAND-KISS-S)

All hospital departments and areas that have beds and thereby generate patient days are defined as “inpatient care” for the purposes of HAND-KISS.

AHR usage surveillance is done retrospectively for peripheral and intensive care units with help of the usage data from the pharmacy and/or with the purchasing and controlling data for the previous calendar year. Usage data from functional areas (e.g. endoscopy, radiology, etc) and outpatient care are considered separately (see 4.2 and 4.3). In general, it is possible for multiple departments and functional areas in one hospital to participate in KISS.

It is possible for rehabilitation clinics to participate in HAND-KISS-S. In this case, departments are not differentiated by field, but it is still possible for more than one unit per clinic to participate in HAND-KISS-S. Rehabilitation departments of acute care hospitals are also included in this category. Choose the unit type “Rehab” on the data collection form for HAND-KISS-S.

Participation in HAND-KISS-S is not recommended for psychiatric departments because of the problematic storage of and accessibility to AHR and because of the relatively low number of necessary HH actions The data of these departments should not be included in HAND-KISS-S.

Hospitals can also participate with just a portion of their departments and units. (Example 1: Only internal medicine, gynecological and surgical departments participate in surveillance, but not the neurological department. Example 2: Only intensive care units in a hospital participate).

The following data have to be collected on a unit-by-unit basis:
1. Name of unit
2. Intensive care (yes or no)
3. Type of unit (internal medicine, interdisciplinary, surgery, other surgical field, other conservative field (without psychiatric fields), pediatrics, neonatology, rehab)

4. KISS abbreviation for unit (when available because of unit participation in another KISS module)

5. Total number of patient days in a calendar year

6. Total AHR usage in mL (= liter x 1000) for that particular unit for that calendar year. The amounts are to be measured by date of delivery to the unit. AHR storage can create fluctuations in this way. For this reason, data collection only occurs yearly and not for shorter observational periods. Shorter time periods can be selected and used for internal evaluation independent of this rule.

The following rates are calculated per unit:

\[
\text{AHR usage per patient day} = \frac{\text{AHR usage in mL in calendar year}}{\text{Patient days in calendar year}}
\]

The calculated rate represents the usage of AHR per patient day.
Because 3 ml AHR is necessary on average for one HH action, the number of HH actions per patient day can be calculated from the amount of AHR used per patient day.

\[
\text{Total HH actions performed per patient day} = \frac{\text{AHR usage in mL per patient day}}{3}
\]

Table 2 shows the data collected by an example hospital and the resulting rates.

**Table 2: Collected AHR usage data**

<table>
<thead>
<tr>
<th>Name of unit</th>
<th>Intensive care</th>
<th>Type of unit</th>
<th>Annual use of AHR in mL</th>
<th>No. of patient days</th>
<th>AHR usage in mL per patient day</th>
<th>Total no. of HH actions per patient day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No</td>
<td>Surgical</td>
<td>368,000</td>
<td>4,338</td>
<td>85</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td>Surgical</td>
<td>200,000</td>
<td>4,399</td>
<td>46</td>
<td>15</td>
</tr>
<tr>
<td>ICU A</td>
<td>Yes</td>
<td>Surgical</td>
<td>211,000</td>
<td>2,065</td>
<td>102</td>
<td>34</td>
</tr>
<tr>
<td>4</td>
<td>No</td>
<td>Internal medicine</td>
<td>156,000</td>
<td>3,567</td>
<td>44</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td>Internal medicine</td>
<td>90,000</td>
<td>3,042</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>ICU B</td>
<td>Yes</td>
<td>Interdisciplinary</td>
<td>164,000</td>
<td>2,872</td>
<td>57</td>
<td>19</td>
</tr>
</tbody>
</table>
4.1.1 Comparing AHB usage in inpatient care

HAND-KISS stratifies reference data by the type of unit (individual reference data for non-intensive care units and for intensive care units by the following types: internal medicine, other conservative field, surgery, other operative field, interdisciplinary, pediatrics, neonatology).

4.2 Functional areas in hospitals (HAND-KISS-F)

AHR usage surveillance for functional areas is done retrospectively with help of the usage data from the pharmacy and/or with the purchasing and controlling data for the previous calendar year. Any organizational unit of a hospital that does not generate patient-days is considered a “functional area” in HAND-KISS-F.

Hospitals can also participate with only a portion of their functional areas (for example: dialysis and gynecology participate, but not radiology).

HAND-KISS differentiates between the following functional areas:

- Dialysis
- Endoscopy
- Radiology
- Clinics (operative fields, conservative fields, and pediatrics)
- Emergency care
- Other

The surgery or other operative area is not included because it would often not be possible to separate the use of AHR for hygienic reasons from its use for surgical preparation.

The following data must be recorded for each functional area:

1. Name of functional area
2. Type of functional area (Dialysis, Endoscopy, Radiology, Clinic, ER, Other)
3. Number of cases treated within the functional area (e.g., the number of endoscopies, dialysis treatments or cases in the ER) in a calendar year
4. Total AHR in mL (=liter x 1000) used in the functional area in one calendar year

The following rates are calculated per functional area:

\[
\text{AHR usage per case} = \frac{\text{AHR usage in mL in calendar year}}{\text{Cases in calendar year}}
\]

The calculated rate represents the average amount of AHR used per case.
Because 3 ml of AHR is necessary on average for one HH action, the number of HH actions per case can be calculated from the amount of AHR used per case.

\[
\text{Total HH actions performed per case} = \frac{\text{AHR usage in mL per case}}{3}
\]

Table 3 shows the data collected by an example hospital and the resulting rates.

Table 3: Collected AHR usage data

<table>
<thead>
<tr>
<th>Name of functional area</th>
<th>Type of functional area</th>
<th>Yearly usage of AHR in mL</th>
<th>Cases per year</th>
<th>AHR use in mL per case</th>
<th>HH actions per case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialysis</td>
<td>Dialysis</td>
<td>22,100</td>
<td>2085</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>First aid</td>
<td>ER</td>
<td>32,700</td>
<td>5585</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Endoscopy</td>
<td>Endoscopy</td>
<td>15,500</td>
<td>2065</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Dermatology clinic</td>
<td>Clinic (5a)</td>
<td>8700</td>
<td>1590</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

4.2.1 Comparing AHR usage in functional areas in hospitals

HAND-KISS stratifies reference data by type of functional area.

5. Documentation specifications

5.1 Electronic data collection

The NRZ has made an electronic data collection system available for HAND-KISS under [www.webkess.de](http://www.webkess.de). Inpatient care units, functional areas and outpatient care areas should use webKess for recording data. In addition, any KISS participant can use webKess to make unit-based evaluations at any time. webKess user registration is required for every HAND-KISS participant. Further information and a guide to webKess in German can be found under: [https://webkess.charite.de/webkess/Docs/webKess-Anleitung.pdf](https://webkess.charite.de/webkess/Docs/webKess-Anleitung.pdf)
5.2 HAND-KISS data collection in webKess

Specifications for HAND-KISS-S and HAND-KISS-F documentation

5.2.1 Master data

These data should be entered once upon registration.

<table>
<thead>
<tr>
<th>Hospital abbreviation</th>
<th>Each hospital receives an abbreviation upon registration with HAND-KISS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total beds</td>
<td>Total number of hospital beds (for stratification of hospitals by size)</td>
</tr>
<tr>
<td>- University hospital</td>
<td>Select appropriate</td>
</tr>
<tr>
<td>- Teaching hospital</td>
<td></td>
</tr>
<tr>
<td>- Other hospital</td>
<td></td>
</tr>
</tbody>
</table>

Prior data

Select where appropriate when data have already been collected in HAND-KISS.

Documentation for participant list

These data should be entered any time a new unit should be registered.

<table>
<thead>
<tr>
<th>Name of unit</th>
<th>Participants select a characteristic to identify the station (e.g. hospital-internal name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive care</td>
<td>Select “yes” for ICUs, and “no” for peripheral stations</td>
</tr>
<tr>
<td>Type of unit</td>
<td>Give the type of unit according to medical discipline. The type can be selected from 8 different types: (internal medicine, interdisciplinary, surgery, other operative discipline, other conservative discipline (without psychiatry), pediatrics, neonatology, rehab). If it is a discipline-specific ICU, select one of the following disciplines: internal medicine, surgery, other operative discipline, other conservative discipline, pediatrics, neonatology. Interdisciplinary ICUs that cannot be assigned to a specialty (e.g. anesthetic ICUs) are assigned the category “interdisciplinary.”</td>
</tr>
<tr>
<td>KiSS abbreviation</td>
<td>In the event that the unit already has a KiSS</td>
</tr>
</tbody>
</table>
abbreviation because of participation in another KISS component (ICU-KISS, DEVICE-KISS), enter the abbreviation here.

<table>
<thead>
<tr>
<th>Name of functional area</th>
<th>Participants select a characteristic to identify the area (e.g. hospital-internal name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of functional area</td>
<td>Select the type of functional area. Select one of the following: dialysis (1), endoscopy (2), radiology (3), emergency room (4), clinic—differentiated here into operative disciplines (5a), conservative disciplines (5b), and pediatrics (5c); and other (6).</td>
</tr>
</tbody>
</table>

3. Documentation of yearly submissions

This information should be provided yearly for the unit.

<table>
<thead>
<tr>
<th>Participation of all units of a hospital in HAND-KISS</th>
<th>If all units of a hospital participate in HAND-KISS, select “yes.” If only some units (for example, only ICUs or surgical units) participate, select “no.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year assessed</td>
<td>Select the calendar year for the information provided</td>
</tr>
<tr>
<td>Yearly use of AHR in mL</td>
<td>Provide the amount of AHR in mL (= liter x 1000). In the event that a unit used multiple kinds of AHR, please give the sum.</td>
</tr>
<tr>
<td>Patient days on unit in specific year</td>
<td>In general hospital administrations count patient days as follows: the day of admission is the first patient day. The day of discharge is not counted.</td>
</tr>
<tr>
<td>Number of cases in specific year</td>
<td>Provide the number of cases treated by the functional area, outpatient care unit, or EMS. For example, the number of dialysis treatments for functional area type (1), or the number of cases in an ENT clinic (5a).</td>
</tr>
</tbody>
</table>


6. References

7. Legal Notice

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