



REPORT ON SURFACE MONITORING OF HAZARDOUS MEDICINAL PRODUCTS

Technical document that collects the results of the first phase of the project to disseminate the Guide for the monitoring of surfaces with hazardous medicinal Products, including indicators of scope, participation and situation of clinical practice in Spain.

Madrid, 10/09/2023

Instituto Español de Investigación Enfermera
Consejo General de Enfermería de España
instituto@consejogeneralenfermeria.org



Consejo General de Colegios Oficiales
de Enfermería de España



INSTITUTO ESPAÑOL
DE INVESTIGACIÓN
ENFERMERA

Executive Summary

Following the publication of the *Guide to the Monitoring of Surfaces Contaminated with Hazardous Medicinal Products (HMPs)* in 2021, a nationwide multicentre study was launched with the aim of disseminating the guide, assessing the current situation regarding the monitoring of surfaces contaminated with HMPs in Spanish healthcare centres, and establishing a baseline for evaluating future improvements in clinical practice.

The first phase of the study took place between September 2022 and May 2023 using a self-administered questionnaire aimed at nursing professionals. A total of 82 valid questionnaires were received from various regions.

The results show that the guidelines have been widely disseminated, with over 8,000 cumulative downloads from the websites of the General Council of Nursing (CGE) and the Spanish Institute for Nursing Research (IEIE). However, the implementation of risk assessment and surface monitoring procedures remains limited. 85% of participants indicated that their facility does not carry out risk assessments for contamination by HMPs, and 89% stated that no surface monitoring procedures are in place.

These results highlight the need to strengthen strategies for implementing and monitoring the recommendations contained in the guide.



1. Introduction

1.1. Background

Occupational exposure to HMPs poses a significant risk to healthcare professionals, particularly during the preparation, administration, transport and disposal of HMPs. Contaminated surfaces represent a potential source of indirect exposure and therefore require specific control and surveillance measures.

With the aim of providing recommendations based on expert consensus and promoting the implementation of safe practices, the Guidelines on the Monitoring of Surfaces Contaminated with HMPs was published in 2021.

1.2. Rationale

Following the publication of the guide, it was deemed necessary to assess its reach and uptake, as well as to ascertain the actual situation regarding surface monitoring in Spanish healthcare centres. Furthermore, the aim was to identify opportunities for improvement and establish a baseline for future actions aimed at enhancing the safety of healthcare professionals.

1.3. Objectives

General Objective

To assess the dissemination of the guide and to ascertain the current situation regarding the monitoring of surfaces contaminated by HMPs in Spanish healthcare centres.

Specific Objectives

- To describe the profile of the participating healthcare professionals.
- To identify the existence of protocols relating to accidental exposure to or spills of HMPs.
- To analyse the implementation of procedures for assessing the risk of contamination from HMPs.
- To determine the frequency of use of surface monitoring programmes.
- To identify the areas and HMPs considered a priority for monitoring.



2. Methods

2.1. Study design

A nationwide, multicentre, quasi-experimental study with a pre-post design, conducted as the first phase of a project aimed at assessing the impact of the guidelines on clinical practice.

2.2. Study period

The first phase of the project was conducted between September 2022 and May 2023.

2.3. Participants

The target population consisted of nursing professionals from across the country, including:

- Unit Clinical Managers.
- Staff nurses.
- Occupational Health nurses.
- Professionals working in occupational health services.

2.4. Data collection tool

An *ad hoc* questionnaire comprising 12 closed-ended questions was designed and administered via the Google Forms platform.

The questions and their answer options were closed-ended, drafted in accordance with the structure of the guide, using it as a benchmark, in order to standardise both texts and facilitate comparisons.

Participation was voluntary and anonymous.

2.5. Variables analysed

Sociodemographic variables

- Professional profile.



- Area of practice.
- Work unit.
- Region of professional practice.

Variables related to clinical practice

- Existence of protocols for dealing with accidental exposure or spills.
- Existence of contamination risk assessment.
- Surface monitoring procedures.
- HMPs subject to monitoring.
- Areas considered to be at risk.
- Frequency and timing of sampling.
- HMPs considered a priority for monitoring.

2.6. Dissemination strategy

The questionnaire was distributed together with the main document and infographics:

- [Plan for monitoring surfaces for HMPs](#).
- [Guide for monitoring surfaces for HMPs contamination](#) (Spanish version) and [Guide for monitoring surfaces for hazardous drug contamination](#) (English version).

The actions carried out included:

Date	Action
26 September 2022	First submission to hospitals
24 November 2022	Second submission to hospitals and primary care centres
27 March–3 April 2023	Third submission targeting communities with low participation
28 April 2023	Dissemination via the Occupational Health Nursing Association
19 May 2023	Dissemination via the AET's WhatsApp channel
22 May 2023	Dissemination via the CGE's social media and channels
28 May 2023	Institutional press release

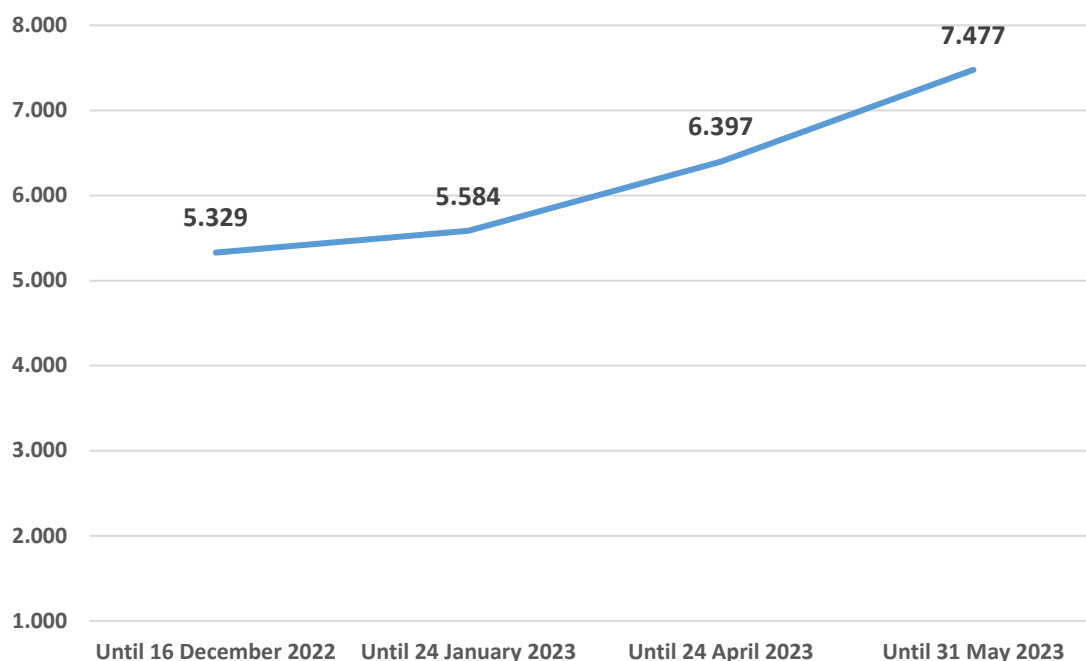


3. Results

3.1. Impact of the guide's dissemination

Downloads from the General Council of Nursing's website reached a cumulative total of 7,477, of which 572 were of the English version (see Figure 1).

Figure 1 Trend in downloads of the Guide to the monitoring of surfaces containing HMPs from the CGE website



Note: Cumulative trend in downloads of the *Guide to the Monitoring of Surfaces Containing HMPs* since its publication on the General Council of Nursing (CGE) website. Both the Spanish and English versions are included. Source: CGE download records.

Meanwhile, the website of the Spanish Institute for Nursing Research recorded 799 downloads, including 518 downloads of the English version.

Taken together, these results reflect the guide's wide dissemination, both nationally and internationally.



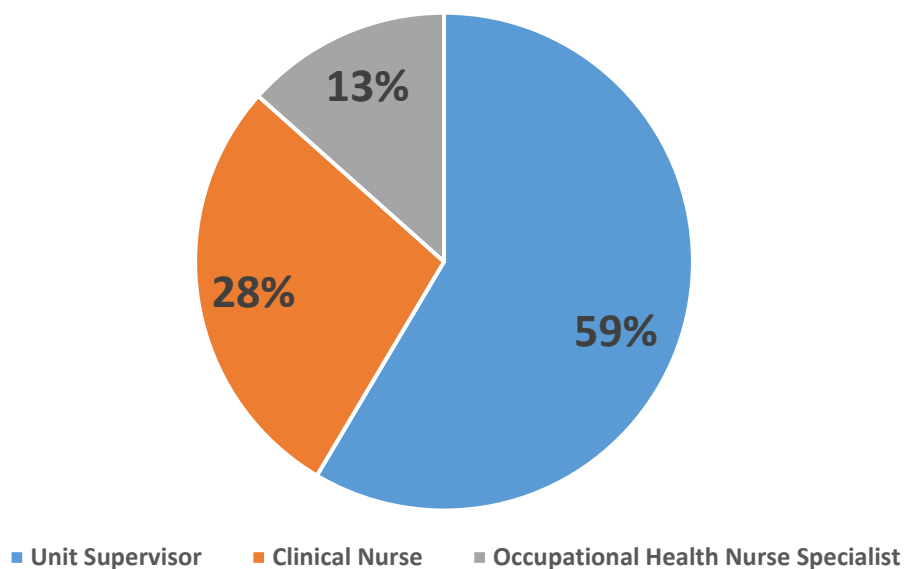
3.2. Sample characteristics

A total of 82 nursing professionals participated.

Professional profile

The distribution of the participants' professional profiles is shown in Figure 2.

Figure 2 Distribution of participants' professional profiles



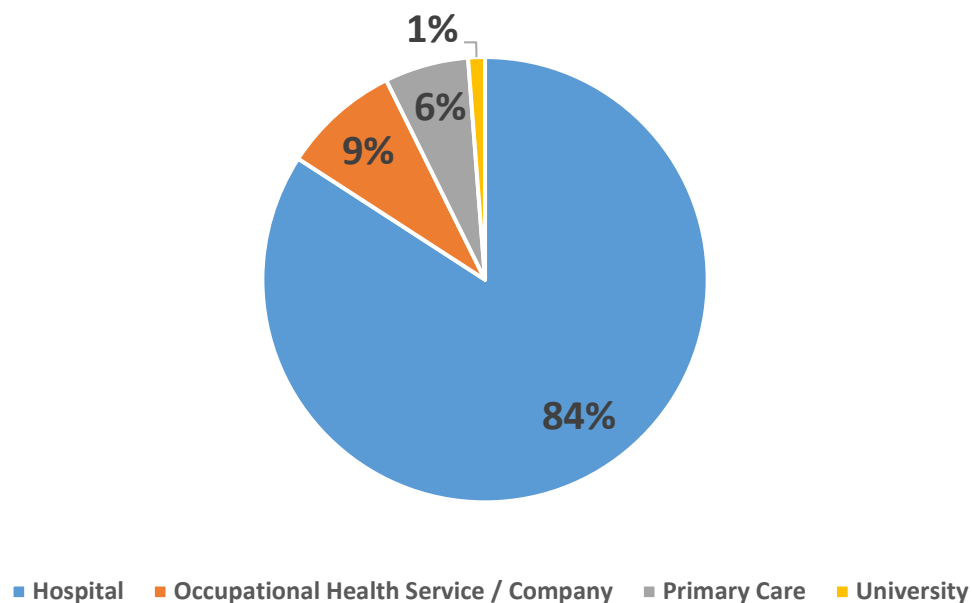
Note: The percentages were calculated based on the total number of valid completed questionnaires (n = 82).

Of the last 18 responses obtained through the Occupational Health Nursing Association, 61% were from occupational health nurse specialists and 39% from general nurses.

Professional field

The distribution of participants according to the field in which they carry out their professional activity is shown in Figure 3.

Figure3 Field in which they carry out their professional activity



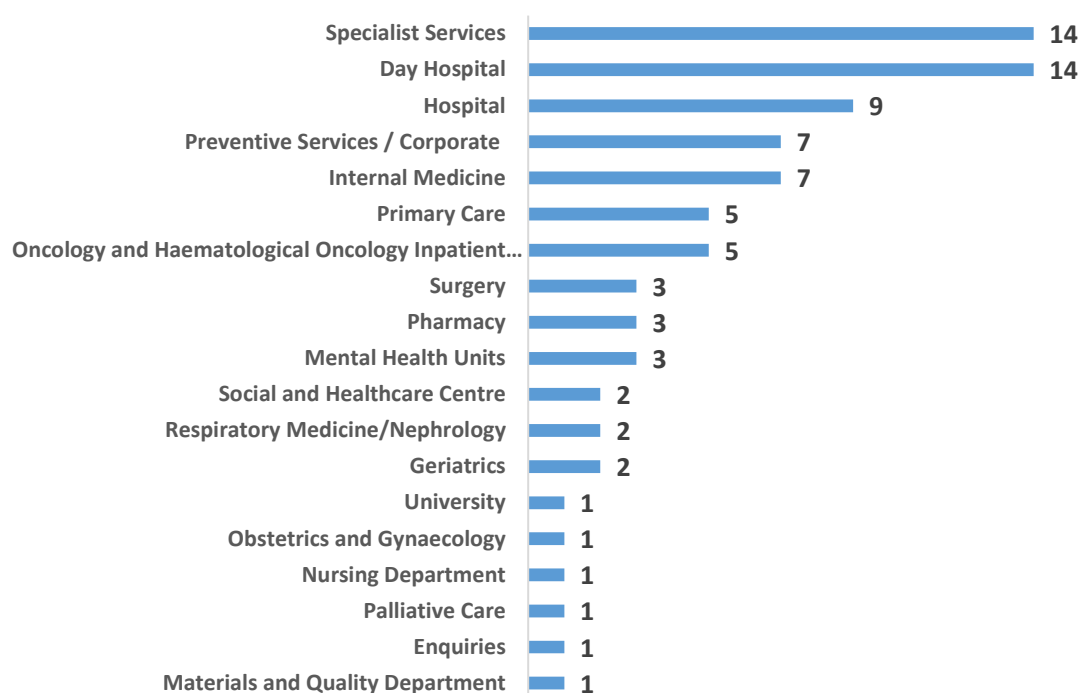
Note: The percentages were calculated based on the total number of valid completed questionnaires (n = 82).

Clinical unit

The participants worked in a wide variety of clinical units, notably specialist services, day hospitals, occupational health/prevention services and internal medicine. The distribution of responses according to the units in which the participants work is depicted in Figure 4.



Figure 4 The respondent's clinical unit



Note: The percentages were calculated based on the total number of valid completed questionnaires (n = 82).

3.3. Geographical distribution

The regions with the highest participation rates were:

<i>Region</i>	<i>Responses</i>
<i>Castile and León</i>	16
<i>Andalusia</i>	16
<i>Catalonia</i>	11
<i>Community of Madrid</i>	8
<i>Galicia</i>	7
<i>Valencian Community</i>	6
<i>Canary Islands</i>	4
<i>Basque Country</i>	4
<i>Asturias</i>	3
<i>Castile-La Mancha</i>	2
<i>Extremadura</i>	2
<i>Navarre</i>	2
<i>Melilla</i>	1

No response was received from Aragón, Cantabria, La Rioja, Murcia, the Balearic Islands or Ceuta.



3.4. Existence of protocols for dealing with accidental exposure or spills

55% of participants stated that they had protocols in place for dealing with accidental exposure or spills of HMPs, whilst 45% indicated that they did not have such protocols or were unaware of their existence.

The affirmative responses were mainly concentrated in day hospitals, specialist departments, onco-haematology wards and internal medicine departments.

The breakdown of the 45 affirmative responses by department, indicating the provinces of these centres, is shown in the following table:

<i>Unit where you work:</i>	<i>No. of responses</i>	<i>Provinces</i>
<i>Day hospitals</i>	14	Madrid, Seville, Girona, Barcelona, Burgos, Vizcaya and Zamora
<i>Special services</i>	7	Asturias, Madrid, Jaén, Málaga, Palencia and Granada
<i>Hospital</i>	7	Barcelona, Melilla, Ourense, A Coruña, Córdoba, Madrid and Seville
<i>Oncology and haematology inpatient care</i>	4	Vizcaya, Zamora, Córdoba and Palencia
<i>Internal medicine</i>	4	Valencia, Valladolid and Málaga
<i>Pharmacy</i>	3	Zamora and Vizcaya
<i>Mental health units</i>	1	Navarre
<i>Respiratory medicine/nephrology</i>	1	Palencia
<i>Material Resources and Quality Department</i>	1	Zamora
<i>Enquiries</i>	1	Barcelona
<i>Primary care</i>	1	Valencia
<i>Surgery</i>	1	Valencia

3.5. Assessment of the risk of surface contamination

Only 15% of participants indicated that their unit or centre carried out any form of assessment of the risk of surface contamination from HMPs. In contrast, 85% stated that such an assessment was not carried out.



The affirmative responses came mainly from day hospitals, oncohaematology wards, specialist departments and internal medicine departments.

The provinces where this practice was identified were Madrid, Girona, Córdoba, Palencia, Málaga, Valencia, Valladolid, Barcelona and Seville.

The breakdown of affirmative responses by department, indicating the provinces of these centres, is presented in the following table:

<i>Unit in which you work:</i>	<i>No. of responses</i>	<i>Provinces</i>
<i>Day hospitals</i>	4	Madrid and Girona
<i>Oncology and oncohaematology inpatient care</i>	2	Córdoba and Palencia
<i>Specialist services</i>	2	Málaga
<i>Internal medicine</i>	2	Valencia and Valladolid
<i>Consultations</i>	1	Barcelona
<i>Hospital</i>	1	Seville

3.6. Surface monitoring procedures

Surface monitoring was reported by only 11% of participants.

Consequently, 89% stated that they did not carry out any monitoring procedures at their centre or unit.

The affirmative responses came mainly from day hospitals, specialist departments, Internal Medicine and the Nursing Management Department.

The provinces with the highest prevalence of monitoring programmes were Madrid, Girona, Málaga, Valladolid and Toledo.

The breakdown of affirmative responses by department, indicating the provinces of these centres, is presented in the following table:

<i>Unit in which you work</i>	<i>No. of responses</i>	<i>Provinces</i>
<i>Day hospital</i>	4	Madrid and Girona
<i>Special services</i>	3	Madrid and Málaga
<i>Internal Medicine</i>	1	Valladolid
<i>Nursing Management</i>	1	Toledo



3.7. HMPs subject to monitoring

Among the professionals carrying out surface monitoring, the HMPs most frequently assessed were:

- Cyclophosphamide.
- Methotrexate.

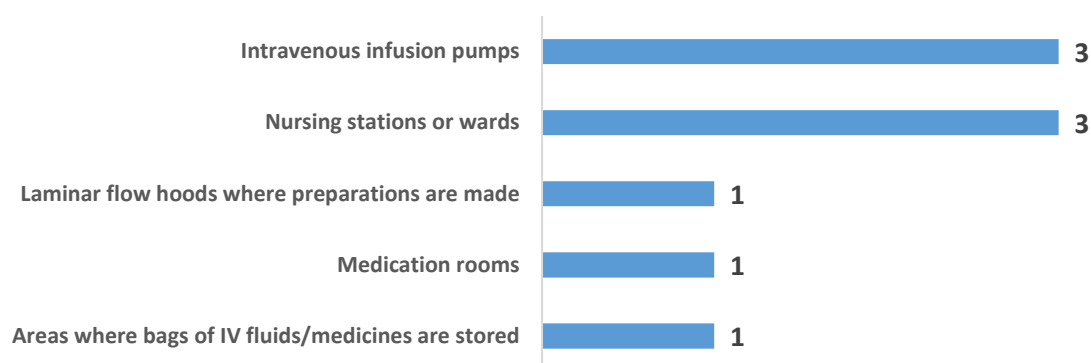
Cyclophosphamide was mentioned primarily by professionals in day hospitals, whilst methotrexate was cited by participants from specialist services, internal medicine and nursing management.

3.8. Areas considered to be at risk

Among participants who reported carrying out surface monitoring ($n = 9$), the areas most frequently identified were intravenous infusion pumps and nursing stations or wards (3 responses each). Less frequently identified were laminar flow hoods where HMPs are prepared, medication rooms and storage areas for fluid bags or intravenous HMPs (1 response each) (Figure 5).



Figure 5. Risk areas identified for surface monitoring involving HMPs (n = 9)

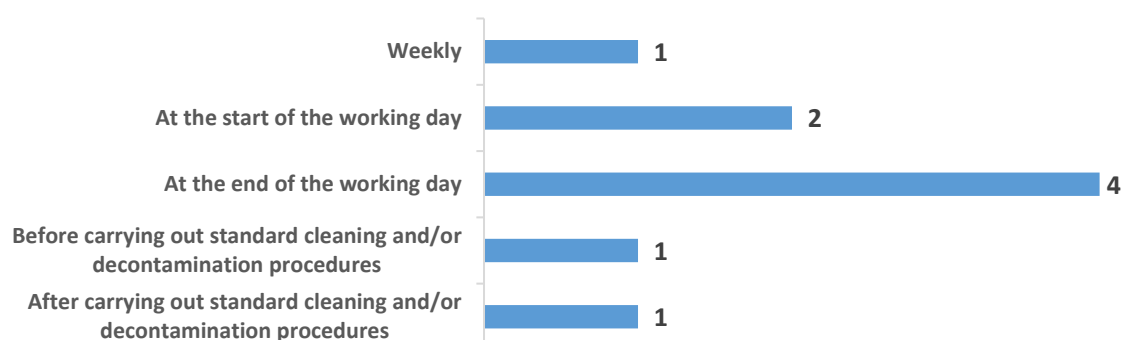


Note. Responses from participants who indicated that they carried out surface monitoring in their unit or centre (n = 9). Participants were allowed to select more than one risk area.

3.9. Timing and frequency of sampling

Among participants who carried out surface monitoring (n = 9), the most common time for sampling was at the end of the working day. Sampling was also reported to take place at the start of the working day and before or after routine cleaning and decontamination procedures. Furthermore, one participant selected the 'weekly' option, which should be interpreted as referring to the frequency of sampling rather than the specific time at which samples were taken (Figure 6).

Figure 6. Usual time of day for taking samples for the monitoring of surfaces contaminated with HMPs (n = 9).



Note. Responses from participants who indicated that they carry out surface monitoring procedures in their unit or centre. The figure shows the time at which samples are usually taken from work surfaces.

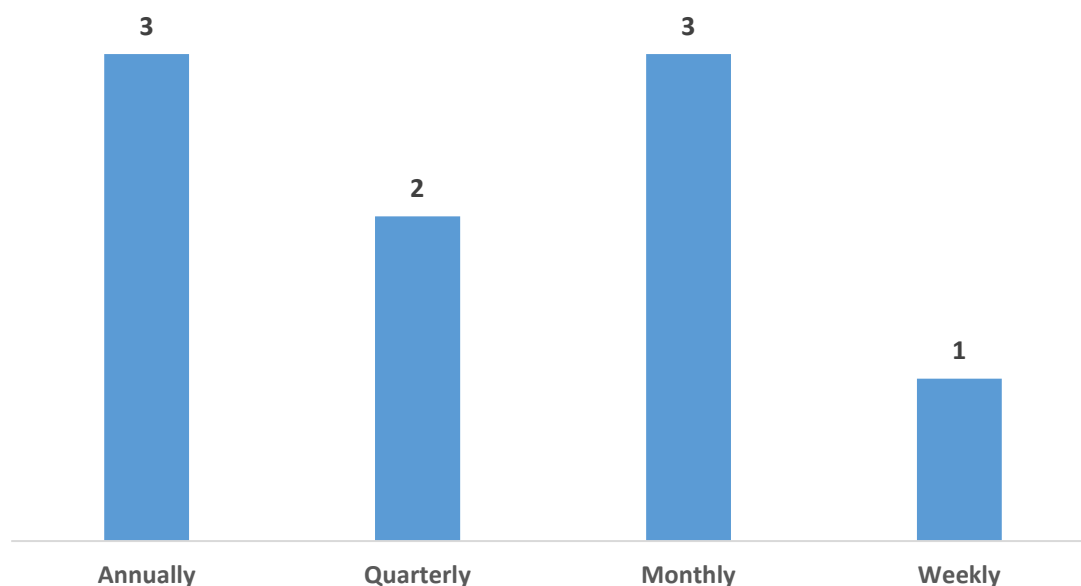
The distribution of responses highlights the lack of a standardised approach regarding the timing of monitoring. Whilst Internal Medicine units and specialist departments reported taking samples at the start of the working day, day hospitals indicated that



sampling took place at the end of the working day. Furthermore, only specialist departments reported carrying out sampling before or after routine cleaning and decontamination procedures.

Among participants who carried out surface monitoring ($n = 9$), the most common sampling frequencies were annually and monthly (3 responses each). Quarterly monitoring was reported by 2 participants and weekly monitoring by 1 participant, reflecting considerable variability in the frequency of these activities across the participating centres and units (Figure 7).

Figure 7. Frequency of sampling by healthcare unit



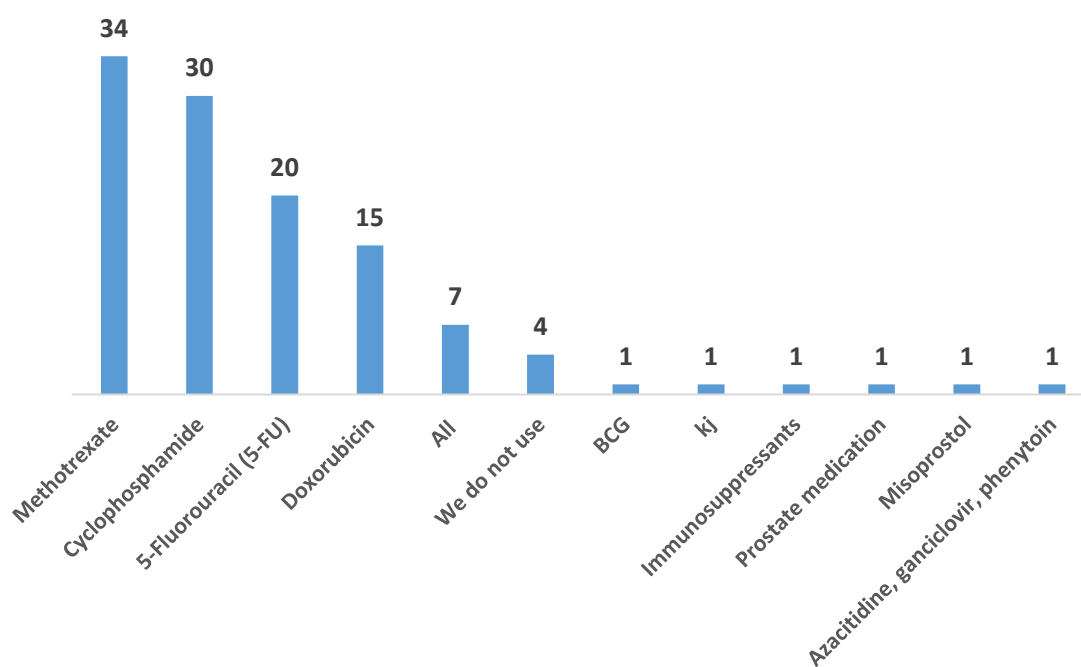
Note. Responses from participants who indicated that they carried out surface monitoring procedures in their unit or centre. The usual frequency of sampling is shown.

The frequency of sampling varied amongst the participating units. Annual and weekly monitoring was reported by staff in day hospitals, quarterly monitoring by specialist departments, and monthly monitoring by staff in Internal Medicine, the Nursing Department and specialist departments. These results reflect considerable heterogeneity in the monitoring programmes implemented.

3.10. HMPs considered a priority for monitoring

The results show broad consensus amongst participants regarding the need to monitor certain HMPs, with methotrexate, cyclophosphamide and 5-fluorouracil being highlighted. These three HMPs accounted for more than half of the recorded responses and were perceived as the priority HMPs for the development of environmental monitoring programmes in healthcare centres (Figure 8)

Figure 12. HMPs that participants consider necessary to monitor



Note: n = 82 participants. A total of 116 responses were recorded, as it was possible to select more than one medicine.



4. Discussion

The results reveal a significant discrepancy between the widespread dissemination of the guidelines and the extent to which the recommendations have been implemented in routine practice.

On the one hand, the number of downloads recorded indicates considerable professional interest in the monitoring of surfaces contaminated with HMPs. The high proportion of international downloads, particularly of the English version, also suggests interest extending beyond the national level.

On the other hand, the questionnaire results show that risk assessment and environmental monitoring remain relatively uncommon practices in the participating healthcare centres. The low level of implementation observed could be related to organisational constraints, a lack of specific resources or the absence of structured environmental surveillance programmes.

There is also considerable variability in the frequency of testing and in the HMPs selected for monitoring, suggesting a need to move towards more uniform and standardised procedures.



5. Conclusions

- a. The guidelines have been widely disseminated both nationally and internationally, with over 8,000 cumulative downloads.
- b. Participation in the questionnaire was limited, with a total of 82 responses received, mainly from hospital settings.
- c. Almost half of the participants were unaware of, or stated that they did not have, specific protocols for dealing with accidental exposure or spills of HMPs.
- d. 85% of professionals indicated that their facility does not carry out risk assessments for surface contamination.
- e. 89% reported not having procedures in place for monitoring surfaces contaminated with HMPs.
- f. The monitoring practices identified are concentrated primarily in day hospitals and specialist departments.
- g. There is a consensus amongst healthcare professionals on the importance of monitoring methotrexate, cyclophosphamide and 5-fluorouracil.
- h. Environmental monitoring of HMPs represents an area with significant scope for improvement to enhance the safety of healthcare professionals.



6. Recommendations

- a. Increase awareness-raising initiatives aimed at healthcare managers and healthcare administrators.
- b. Promote the implementation of specific protocols for the assessment and monitoring of surfaces.
- c. Develop training programmes aimed at nursing staff and occupational health and safety professionals.
- d. Encourage the standardisation of criteria regarding areas, HMPs and monitoring frequencies.
- e. Encourage the use of rapid detection methods, particularly for widely used HMPs such as cyclophosphamide.
- f. Develop the second phase of the project to assess the actual impact of the guidelines on the implementation of monitoring programmes and the improvement of occupational safety in healthcare facilities.

