

# REDUCTION OF MEDICATION ERRORS

**Research with Chief Hospital Pharmacists in Portugal**

IPSOS

February 2022



# AGENDA

- 1 – HOSPITAL BACKGROUND INFORMATION
- 2 – MEDICATION ERRORS (MES) AND PREVENTABLE ADVERSE EVENTS
- 3 – INFORMATION SYSTEMS
- 4 – UNIT DOSE MEDICATION SYSTEMS
- 5 – PHARMACY INVENTORY SYSTEMS
- 6 – FUTURE
- 7 – CONCLUSIONS AND RECOMMENDATIONS

# HOSPITAL BACKGROUND INFORMATION

# 1

# SAMPLE DISTRIBUTION

## COUNTRY DISTRIBUTION

Belgium	10
France	42
Germany	40
Hungary	6
Ireland	4
Italy	42
Netherlands	10
Poland	20
<b>Portugal</b>	<b>36</b>
Spain	41
Sweden	5
Switzerland	12
UK	40
*Private Hospitals (UEHP)	9
<b>TOTAL</b>	<b>317</b>

(\*) European Union of Private Hospitals (UEHP)

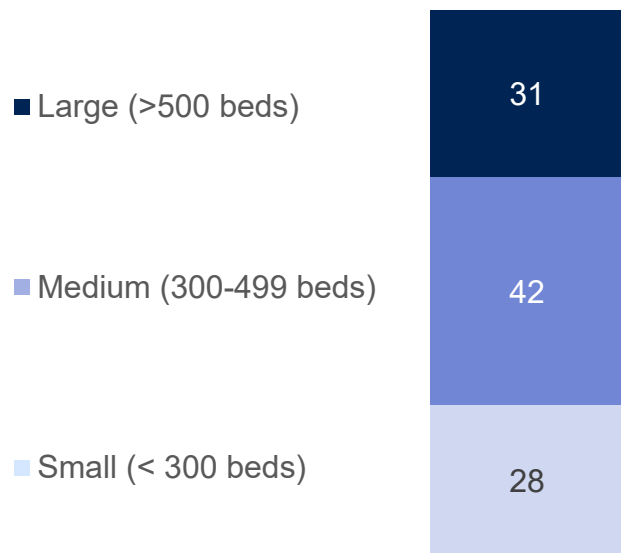
1. In what country is your hospital based? Base: total sample (317)



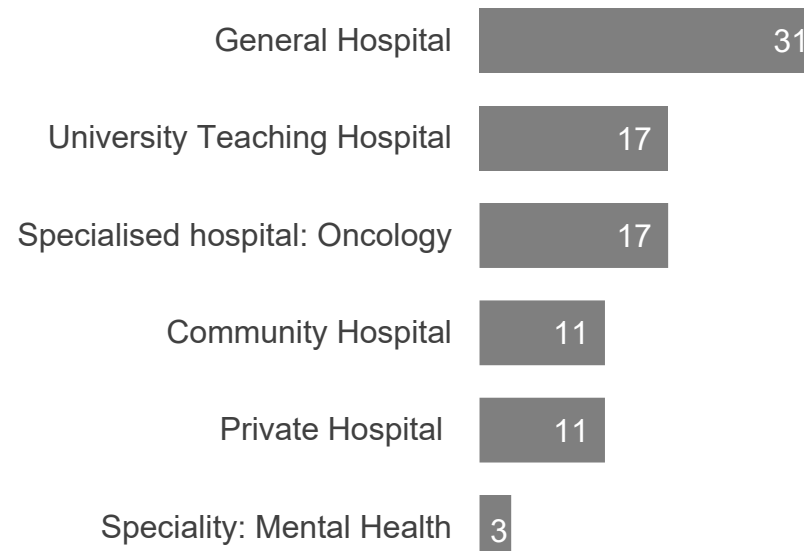
# HOSPITAL TYPE AND SIZE

- Figures expressed as a % -  
Multiple answers can be given

## SIZE OF HOSPITAL (ACCORDING TO # OF BEDS)



## TYPE OF HOSPITAL



2. If you were to count all of the hospital beds that come under your hospital's responsibility (include networks/buildings) what would that number approximately be? / 3. Please describe the type of hospital you work in. Please indicate more than one description if it clarifies the type of hospital.

Base: total sample (36)

# MEDICATION ERRORS (MEs) AND PREVENTABLE ADVERSE EVENTS

# 2

Detection and monitoring

# NOT ALL HOSPITALS ARE ACCREDITED

However, not all of them include MEs in their accreditation process

- Figures expressed as a % -



**67%**

of hospitals  
are **accredited**



**21%**

of them **do not include  
medication errors** in the  
accreditation process

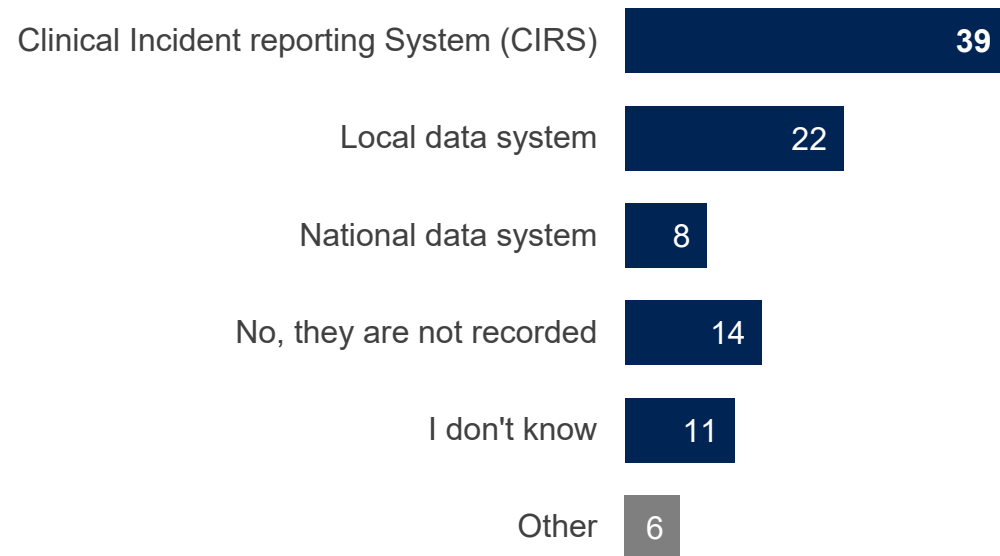
4. Is your hospital accredited (has it a quality certification or passed a recognized inspection)? Base: total sample (36)

5. Are medication errors included in this accreditation process? Base: Hospital accredited (24)

# MOST MEs ARE RECORDED IN CIRS OR LOCAL DATA SYSTEMS

Only 14% of respondents do not record MEs in a database

## DATABASE FOR RECORDING MEDICATION ERRORS



- Figures expressed as a % -



6. Are medication errors recorded in a database such as:  
Base: total sample (36)

# MEs ARE BARELY AVAILABLE TO THE PUBLIC

Only 6% of ME are available, all of them published in the annual hospital report

- Figures expressed as a % -



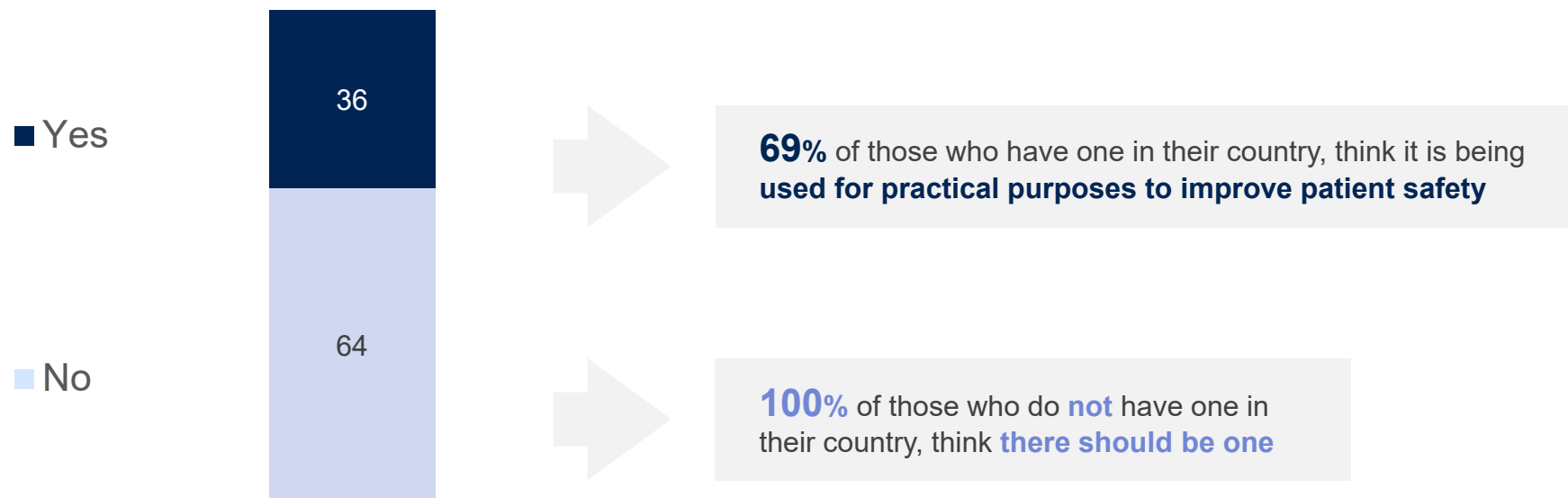
7. Are medication errors from your hospital available to the public? Base: total sample (36)  
7a. Where are medication errors published? Base: Medication errors available to the public (2)

# LOW AVAILABILITY OF ME DATABASES IN THE COUNTRY FOR SHARING CONTINUAL IMPROVEMENT INITIATIVES

However, those who do not have it, believe there should be one

- Figures expressed as a % -

## AVAILABILITY OF MEDICATION ERROR DATABASE IN THEIR COUNTRY FOR SHARING CONTINUAL IMPROVEMENT INITIATIVES



8. Are there any local, regional and national database to record and survey medication errors in your country with the objective to share continual improvement initiatives? Base: total sample (36)

8a. And would you say that this information is being used for practical purposes to improve patient safety? Base: Database available in their country (13)

8b. And in your opinion, should there be one? Base: Database not available in their country (23)

# 53% OF MEs ARE TRACKED CENTRALLY

However, 36% of hospitals do not routinely track MEs

- Figures expressed as a % -  
Multiple answers can be given

## AREAS WHERE MEDICATION ERRORS ARE TRACKED

Centrally that covers all of the hospital

53

Intensive care

14

Oncology

11

General wards

11

Not routinely tracked

36

Other

3

9. In what areas do you track medication errors?

Base: total sample (36)



# MEs AND AEs DATA MONITORING ARE MAINLY USED AS A ROOT CAUSE ANALYSIS TO RESOLVE INCIDENTS

However, 13% of the hospitals don't use it very much

- Figures expressed as a % -  
Multiple answers can be given

## MEDICATION ERROR AND ADVERSE EVENT DATA MONITORING

Root cause analysis to resolve incidents

36

Investigated and discussed at regular quality meetings

25

Teaching initiatives and/or error prevention

25

Performance managed with key performance indicators

19

Not used very much – needs improvement

61

10. How is the medication error and adverse event data monitoring used in your hospital?

Base: total sample (36)



# 53% OF HOSPITALS ARE NOT AWARE OF THE NUMBER OF MEs BEING REGISTERED

Most registered MEs are being analysed

ESTIMATED NUMBER OF MEDICATION ERRORS PER YEAR

- Figures expressed as a % -



11. What is the estimated total number of medication errors per year registered and analysed in your hospital?  
Base: total sample (36)

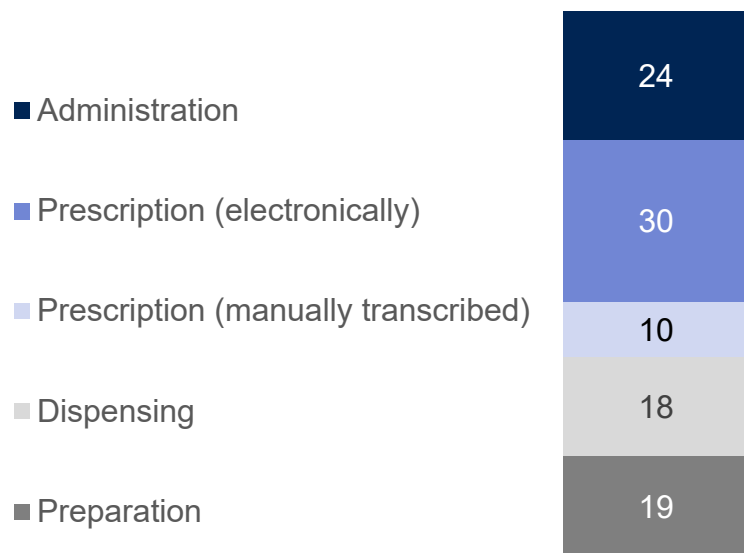


# MEs OCCUR AT ALL STAGES BUT MAINLY AT ELECTRONIC PRESCRIPTION AND ADMINISTRATION

Manually transcribed prescription shows the lowest frequency of MEs

- Figures expressed as a % -  
Multiple answers can be given

## FREQUENCY OF EACH MEDICATION ERROR



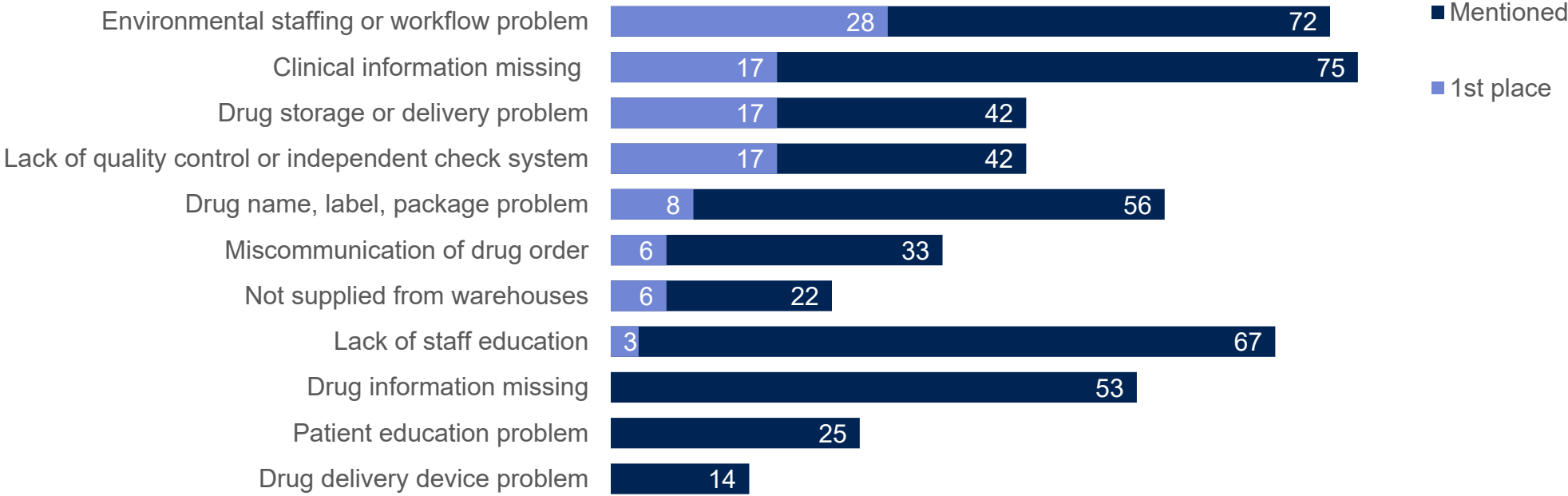
12. What is the estimated frequency as a percent of medication errors, within the medication process phases listed below?  
Base: total sample (36)

# ENVIRONMENTAL, STAFFING OR WORKFLOW PROBLEMS ARE THE MAIN CAUSES OF MEs

With many other causes being stated

- Figures expressed as a % -

## MAIN CAUSE OF MEDICATION ERRORS (RANKING)



13. What are the main causes of medication errors in your hospital? Please rank the 5 most important drivers of the 11 listed here.  
 Base: total sample (36)



# OPEN DISCUSSIONS ARE BELIEVED TO BE THE BEST SOLUTION TO ENSURE CONTINUAL IMPROVEMENT

However, over 1 in 2 hospitals state that little or no action is taken to improve medication safety performance

- Figures expressed as a % -  
Multiple answers can be given

## ACTIONS USED TO DRIVE IMPROVED MEDICATION SAFETY PERFORMANCE

Medication errors and near misses are discussed in an open/transparent way to help to ensure continual improvement

44

Targets set and medication errors measured and monitored

28

Inspection against hospital accreditation standards

22

Self declaration of policies and standards in place

8

Little or no action taken

53

14. Which actions, if any, are used to drive improved medication safety performance in your hospital?

Base: total sample (36)



# 44% HOSPITALS HAVE A TRAINED HCP TO DETECT MEs

Being mainly Hospital Pharmacists or Quality Managers

- Figures expressed as a % -  
Multiple answers can be given

**44%**

of hospitals have trained healthcare professionals dedicated to **detect medication errors** and **enhance patient safety**

that are...

Hospital Pharmacist(s)

75

Quality Manager(s)

63

Medical Director(s)

25

Unit Manager(s)

19

Other

19

15. Is there a trained health care professional specifically dedicated to detect medication errors and enhance patient safety in your hospital? Base: total sample (36)

15a. Which healthcare professionals have been trained? Base: Medication errors available to the public (16)

# INFORMATION SYSTEMS

# 3

# ELECTRONIC MEDICAL RECORD

## 3.1

# MOST HOSPITALS HAVE AN **ELECTRONIC MEDICAL RECORD SYSTEM**

But not always integrated with primary care



**97%**

of hospitals have an **electronic medical record system** in at least one of its areas



**57%**

of them **have them integrated** with primary care

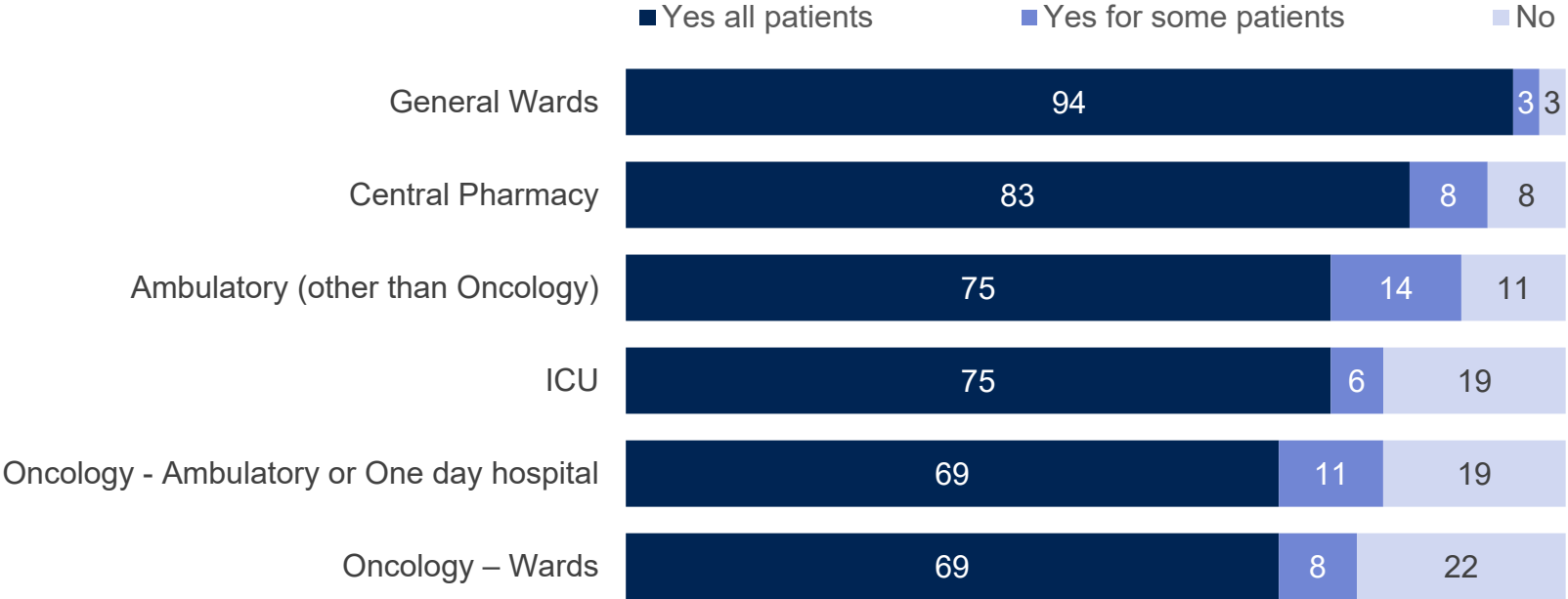
16. Does your hospital have an electronic medical record system for: Base: total sample (36)

17. Is the electronic medical record integrated with primary care? Base: Hospital has electronic medical system (35)

# ELECTRONIC MEDICAL RECORDS SYSTEMS ARE NOT AVAILABLE FOR ALL PATIENTS

- Figures expressed as a % -

## ELECTRONIC MEDICAL RECORD SYSTEM AVAILABILITY



16. Does your hospital have an electronic medical record system for:  
 Base: total sample (36)



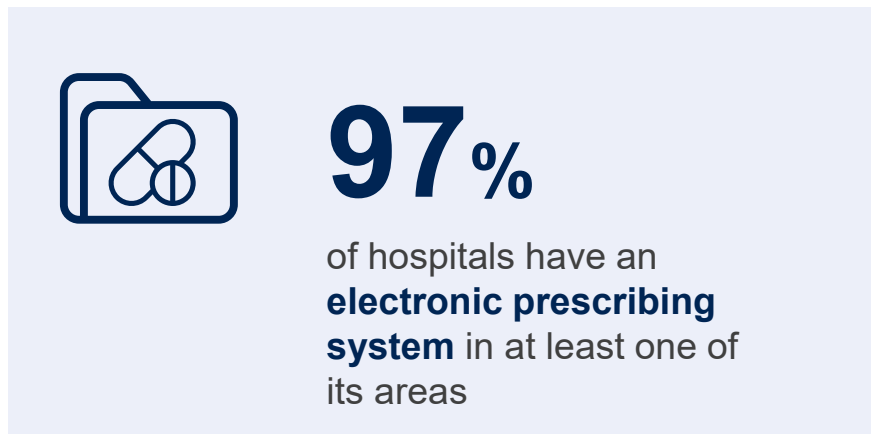
# **ELECTRONIC PRESCRIBING SYSTEM**

# **3.2**

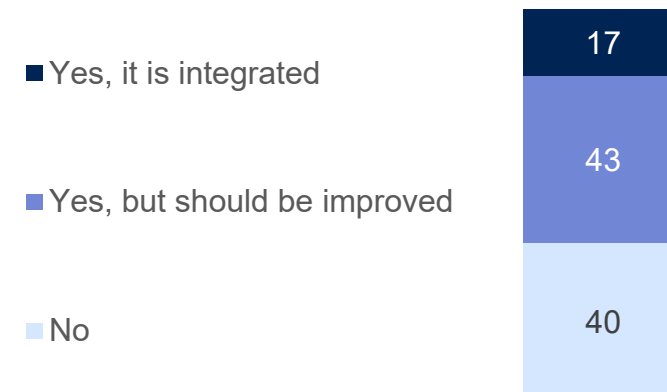
# MOST HOSPITALS HAVE AN ELECTRONIC PRESCRIBING SYSTEM AVAILABLE

However, there is room for improving the integration with clinical decision support systems

- Figures expressed as a % -



## ELECTRONIC PRESCRIBING INTEGRATION WITH A CLINICAL DECISION SUPPORT SYSTEM



18. Does your hospital have an electronic prescribing system for the following areas? Base: total sample (36)

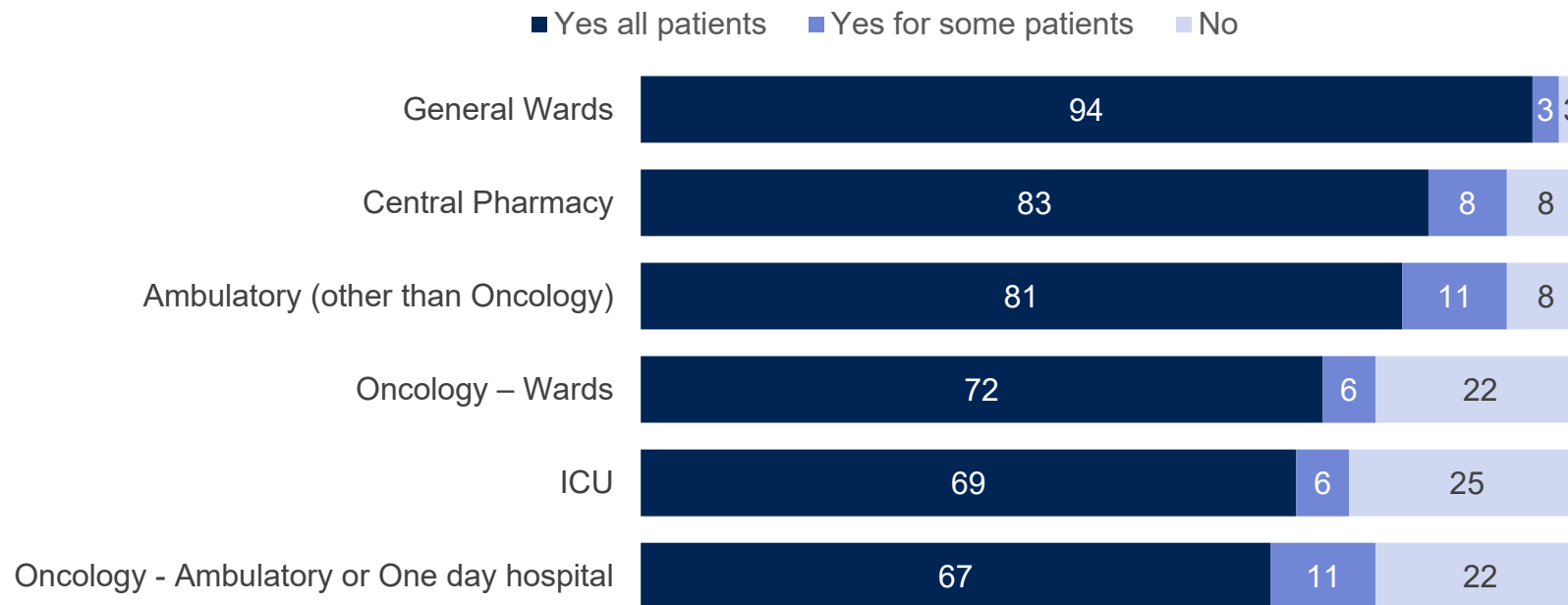
19a. Is your electronic prescribing system integrated with a clinical decision support system? Base: Hospital has electronic medical system (35)

# ELECTRONIC PRESCRIBING SYSTEMS ARE AVAILABLE FOR MOST PATIENTS

Especially in general wards and central pharmacy

- Figures expressed as a % -

## ELECTRONIC PRESCRIBING SYSTEM AVAILABILITY



18. Does your hospital have an electronic prescribing system for the following areas?

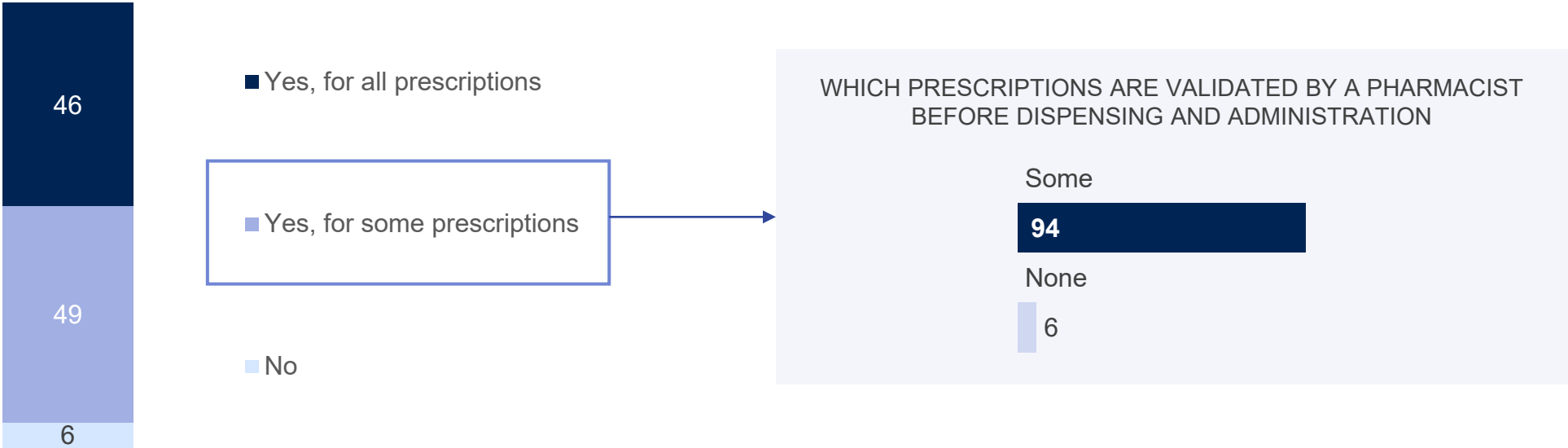
Base: total sample (36)

# ELECTRONIC PRESCRIPTIONS ARE NOT ALWAYS VALIDATED BY A PHARMACIST

6% of prescriptions are not validated

- Figures expressed as a % -

## ELECTRONIC PRESCRIPTIONS VALIDATED BY A PHARMACIST BEFORE DISPENSING AND ADMINISTRATION



19b. Are your electronic prescriptions validated by a pharmacist before dispensing and administration? Base: Hospital has electronic medical system (35)

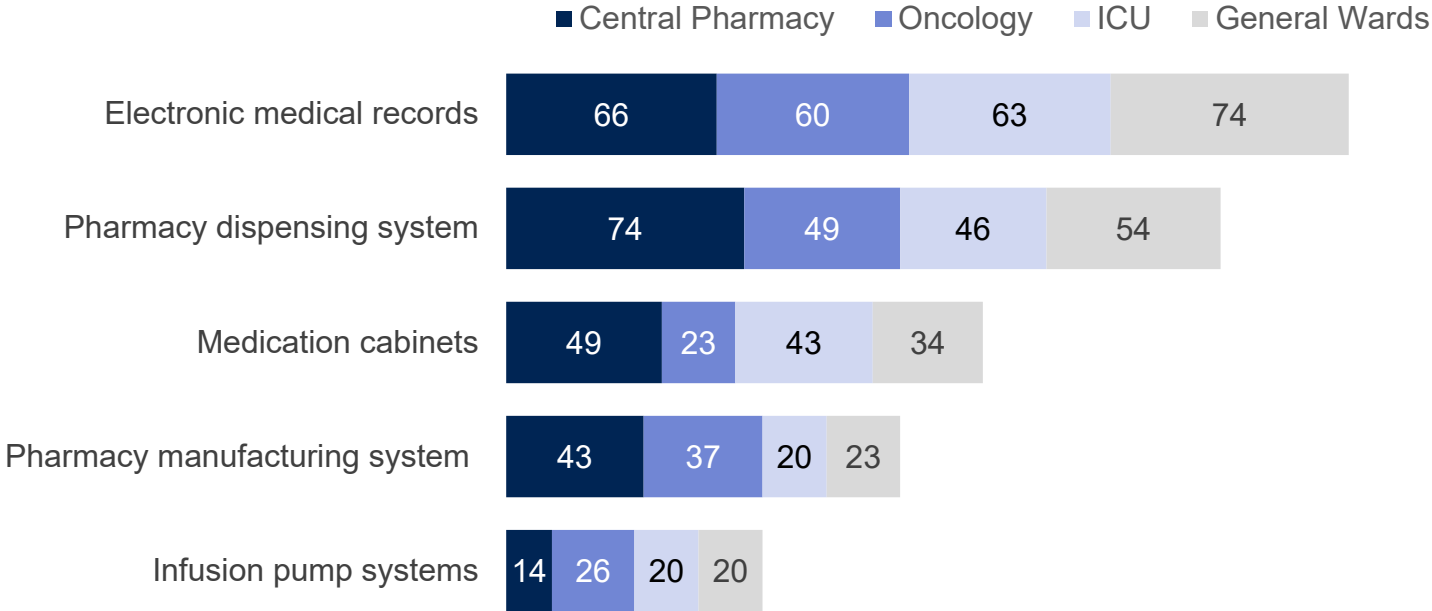
19c. Please, specify which prescriptions are validated by a pharmacist before dispensing and administration: Base: Some prescriptions are validated by a pharmacist (17)



# THE ELECTRONIC PRESCRIBING SYSTEM IS VARIABLY INTEGRATED WITH OTHER SYSTEMS

- Figures expressed as a % -  
Multiple answers can be given

## ELECTRONIC PRESCRIBING SYSTEM INTEGRATION



20. Is the electronic prescribing system integrated with:  
Base: Hospital has electronic medical system (36)

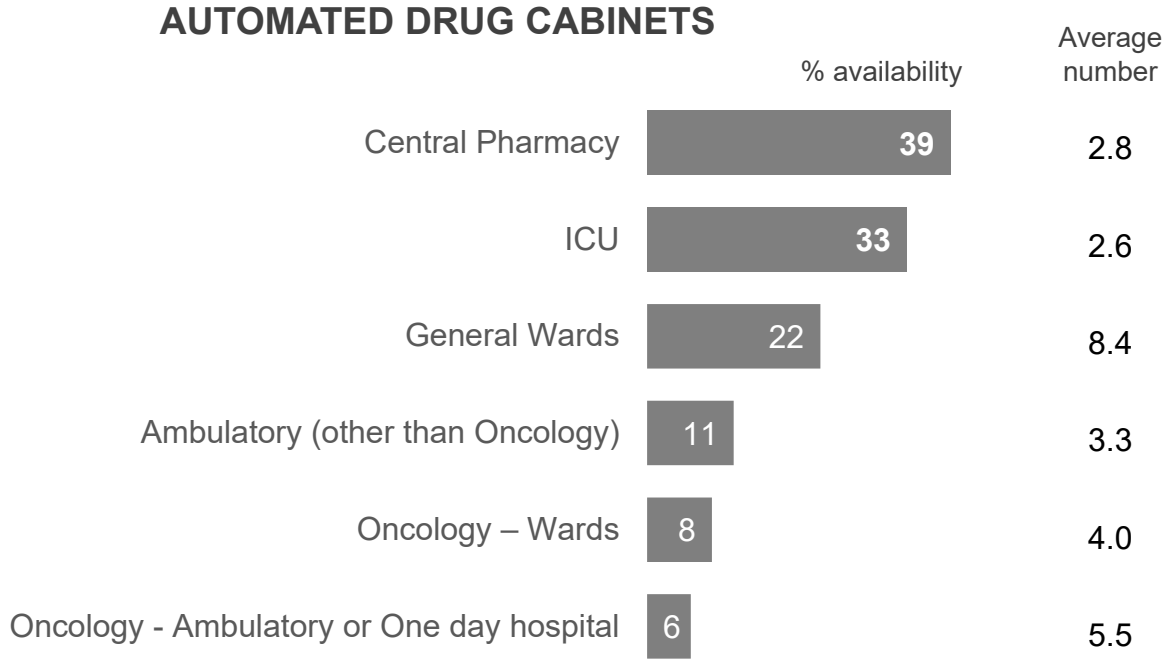


# ELECTRONIC DRUG DISPENSING SYSTEM

## 3.3

# AUTOMATED DRUG CABINETS ARE MAINLY AVAILABLE IN CENTRAL PHARMACY AND ICU

- Figures expressed as a % -



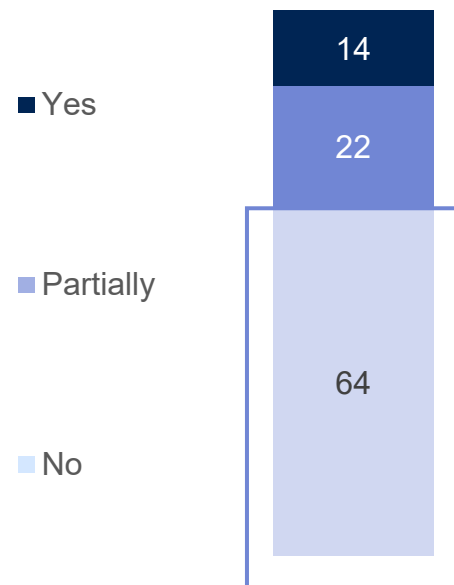
21. Are automated drug cabinets available? Base: total sample / 21a. How many automated drug cabinets are available? Base: automated drug cabinets available



# BAR CODING TO VERIFY DRUG SELECTION PRIOR TO DISPENSING OR REFILLING AUTOMATED CABINETS IS LOW

- Figures expressed as a % -

## BAR CODING TO VERIFY DRUG SELECTION PRIOR TO DISPENSING ON AUTOMATED DRUG CABINETS



22. Is bar coding used to verify drug selection prior to dispensing drugs and / or to refill the automated dispensing cabinets? Base: total sample (36)

# ELECTRONIC DRUG COMPOUNDING SYSTEM

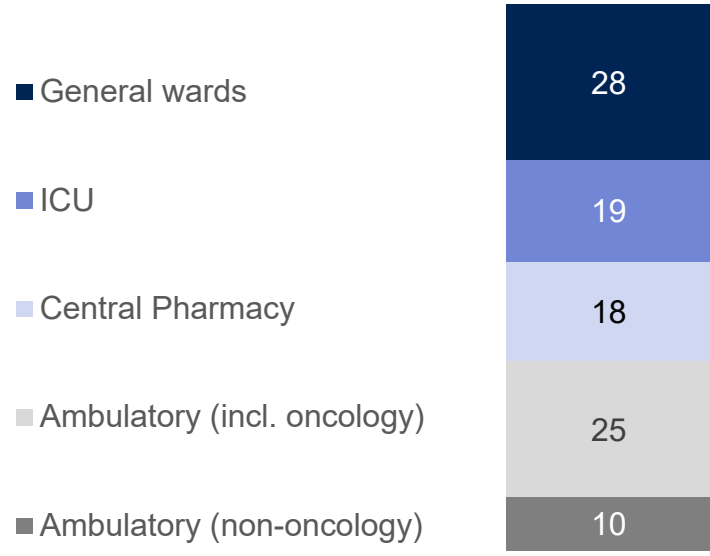
## 3.4

# ONLY 18% OF INFUSION MEDICATION IS PREPARED IN CENTRAL PHARMACY

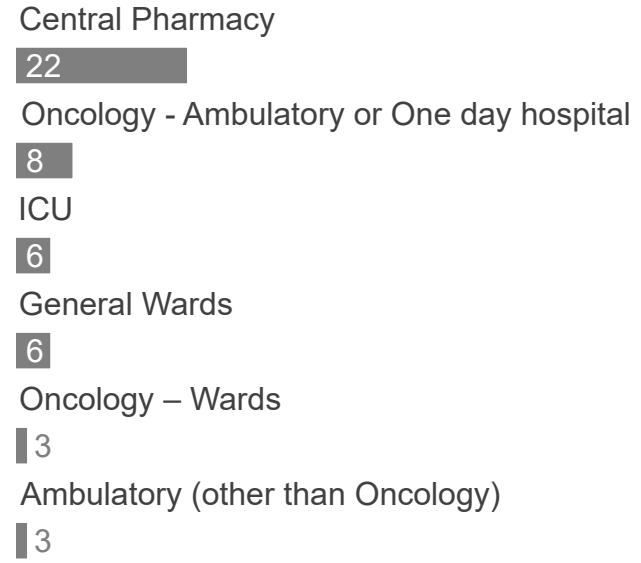
Electronic medication systems are barely available

- Figures expressed as a % -

## INFUSION MEDICATIONS PREPARATION (MEAN)



## ELECTRONIC PREPARATION/COMPOUNDING SYSTEM AVAILABILITY



23. What is the percentage of infusion medications prepared by? / 24. For the medications prepared in the following areas, is there an electronic preparation/compounding software-based system?

Base: total sample (36)



# MOST HOSPITALS DO NOT IMPLEMENT NURSING STANDARD OPERATING PROCEDURES



**36%**

of hospitals have **pharmacists involved with implementing nursing standard operating procedures** for aseptic or injectable preparation on the wards

*25. Are pharmacists involved with implementing nursing standard operating procedures on aseptic or injectable preparation on the wards to ensure governance of this “out of pharmacy” activity and thus minimise risk? Base: total sample (36)*



# **ELECTRONIC MEDICATION ADMINISTRATION SYSTEM**

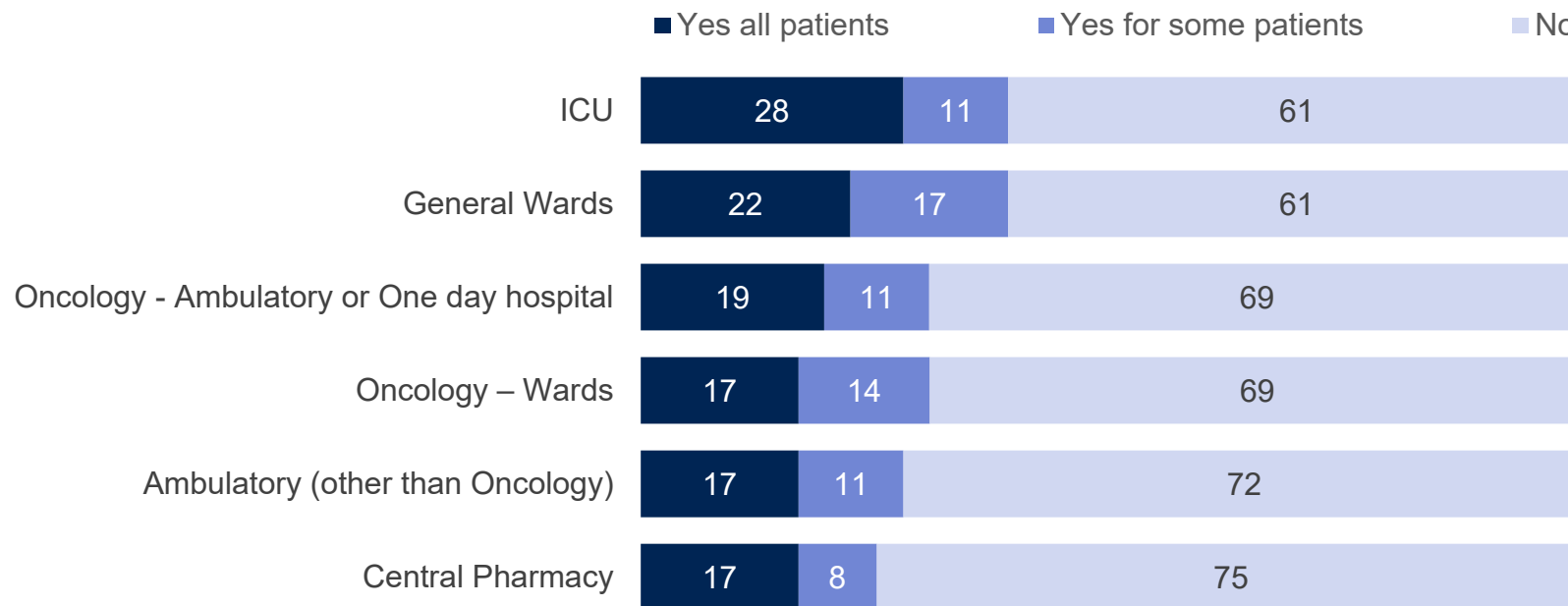
# **3.5**

# NOT ALL HOSPITALS HAVE AN ELECTRONIC SYSTEM FOR MONITORING ADMINISTRATION

The highest proportion is in ICU

- Figures expressed as a % -

## AVAILABILITY OF ELECTRONIC SYSTEM FOR MONITORING ADMINISTRATION



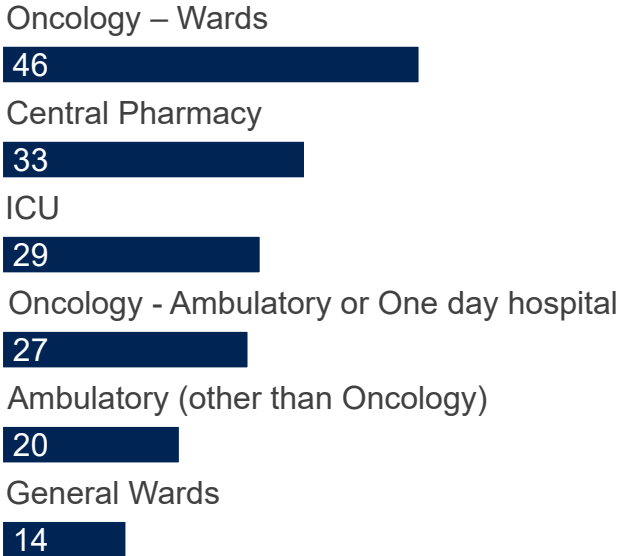
26. Is there an electronic system for monitoring administration in the following areas?

Base: total sample (36)

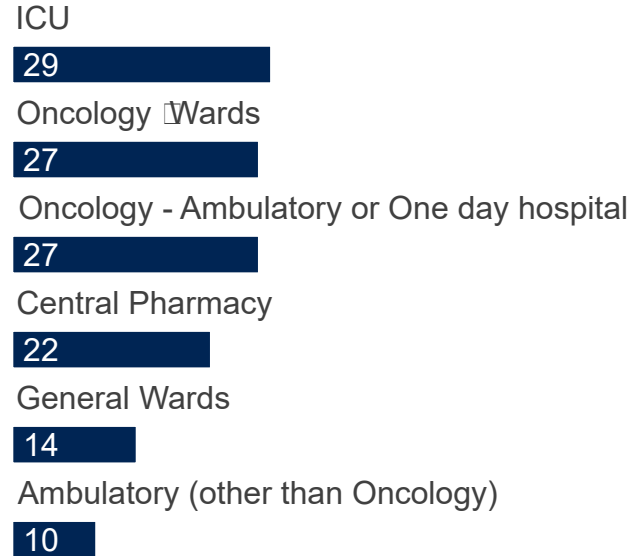
# THE ELECTRONIC BAR CODE SYSTEM / ELECTRONIC SYSTEM FOR CHECKING PATIENT AND MEDICATION AND IV DOSE ARE MAINLY USED IN ONCOLOGY, ICU AND CENTRAL PHARMACY

## ELECTRONIC BAR CODE SYSTEM FOR CHECKING PATIENT AND MEDICATION

- Figures expressed as a % -



## ELECTRONIC SYSTEM FOR CHECKING IV DOSE



27. Is the electronic system checking the right patient and right medication through bar code readers and/or optical medication scanners before administration? (10)/ 28. Does the electronic system check that the IV dose is correct prior to administration?

Base: Electronic system for monitoring in the area (10)

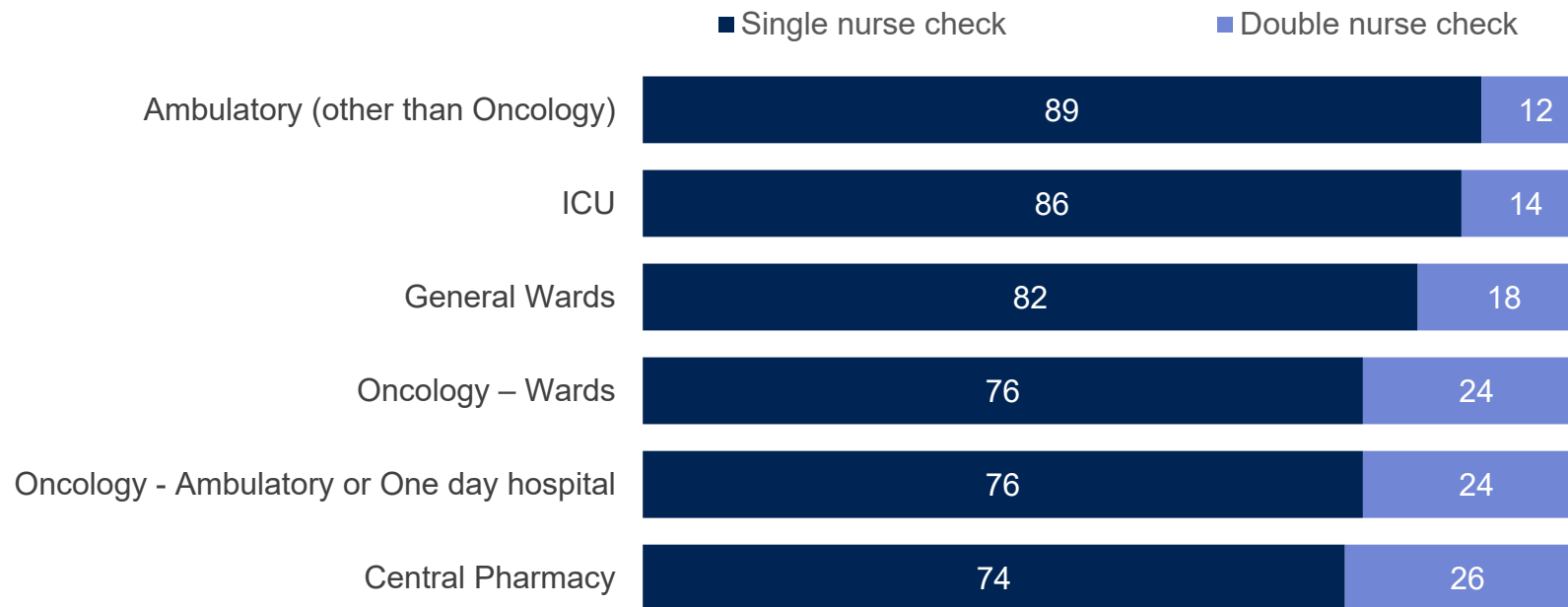


# DOUBLE NURSE CHECK WHEN ELECTRONIC CHECKING SYSTEMS ARE NOT AVAILABLE IS MOSTLY NOT IMPLEMENTED

Double nurse check is more common in Oncology and Central Pharmacy

- Figures expressed as a % -

## PRACTICE WHEN ELECTRONIC SYSTEM FOR MONITORING ADMINISTRATION NOT AVAILABLE



29. What is the current practice if you do not use an electronic checking system for administration?

Base: Electronic system for monitoring in the area not available (26)

# VERY LIMITED AVAILABILITY OF NEAR-MISS INFUSION MEs TRACKED VIA DERS

- Figures expressed as a % -

## ERRORS TRACKING THROUGH DERS (DOSE ERROR REDUCTION SOFTWARE)

Oncology – Wards

6

Oncology - Ambulatory or One day hospital

6

ICU

6

Central Pharmacy

3

General Wards

3

Ambulatory (other than Oncology)

3



30. Do you track near-miss infusion medication errors through data returned from dose error-reduction software (DERS) smart pumps?

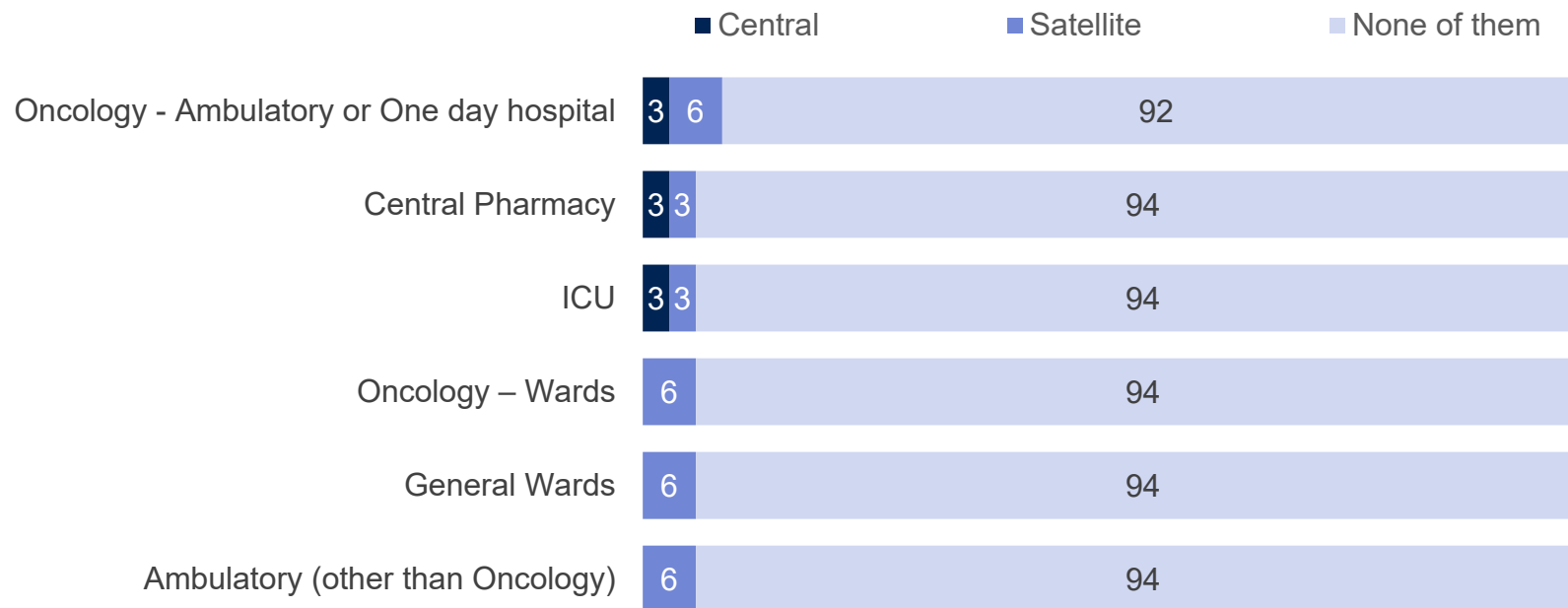
Base: total sample (36)

# MOST HOSPITALS DO NOT MONITOR INFUSIONS FROM A CENTRAL LOCATION

Neither central nor satellite

- Figures expressed as a % -

## INFUSIONS MONITORING FROM A CENTRAL LOCATION



31. Do you monitor infusions from a central location, such as pharmacy or a satellite pharmacy?

Base: total sample (36)

# UNIT DOSE MEDICATION SYSTEMS

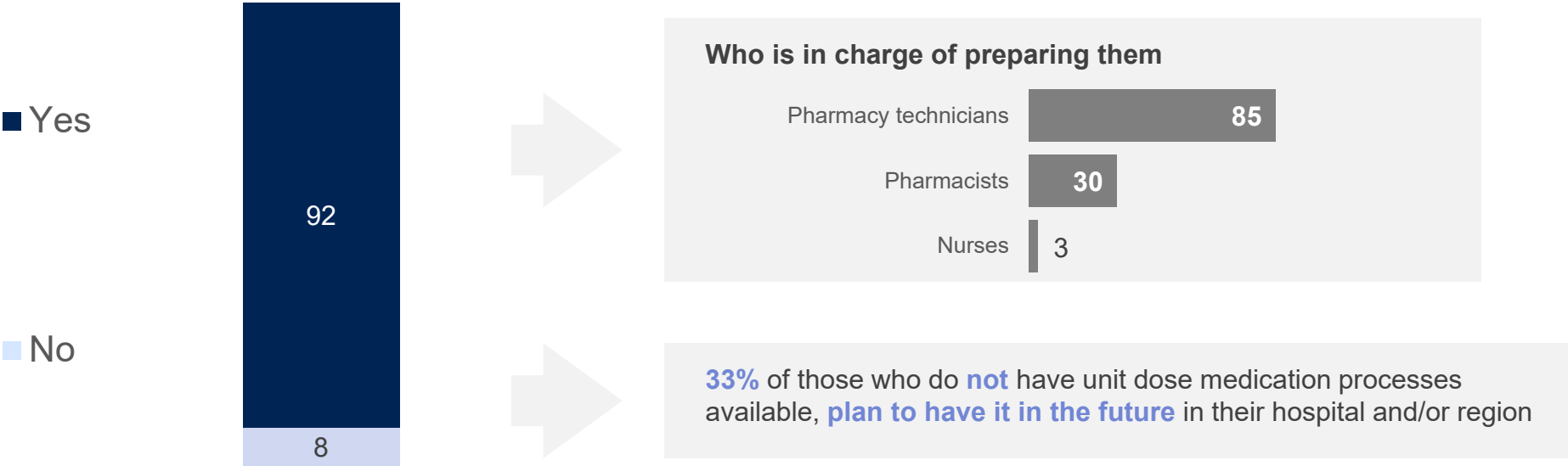
# 4

# ALMOST ALL HOSPITALS HAVE UNIT DOSE MEDICATION PROCESSES

Mainly prepared by Pharmacy Technicians

- Figures expressed as a % -  
Multiple answers can be given

## AVAILABILITY OF UNIT DOSE MEDICATION PROCESSES



32. Do you have unit dose medication processes in your hospital? Base: total sample (36)

33. Who is mainly in charge of preparing the unit doses? Base: Unit dose medication processes available in their hospital (33)

34. Are you planning to have a unit dose medication in the future in your hospital and or region? Base: Unit dose medication processes not available in their hospital (3)

# PHARMACY INVENTORY SYSTEMS

# 5

# MANUAL SHELVES & PHARMACY INFORMATION SYSTEMS ARE MOSTLY USED TO MANAGE PHARMACY INVENTORY

Only 1 in 5 hospitals have central pharmacy robots

- Figures expressed as a % -  
Multiple answers can be given

## SYSTEMS USED TO MANAGE PHARMACY INVENTORY

Manual shelves and counts in pharmacy

86

Pharmacy Information System

67

Manual counts on the wards

47

Cardex type manual systems

39

Central Pharmacy robots

19

Ward automated dispensing cabinets

17



35. What systems are used to manage pharmacy inventory?

Base: total sample (36)

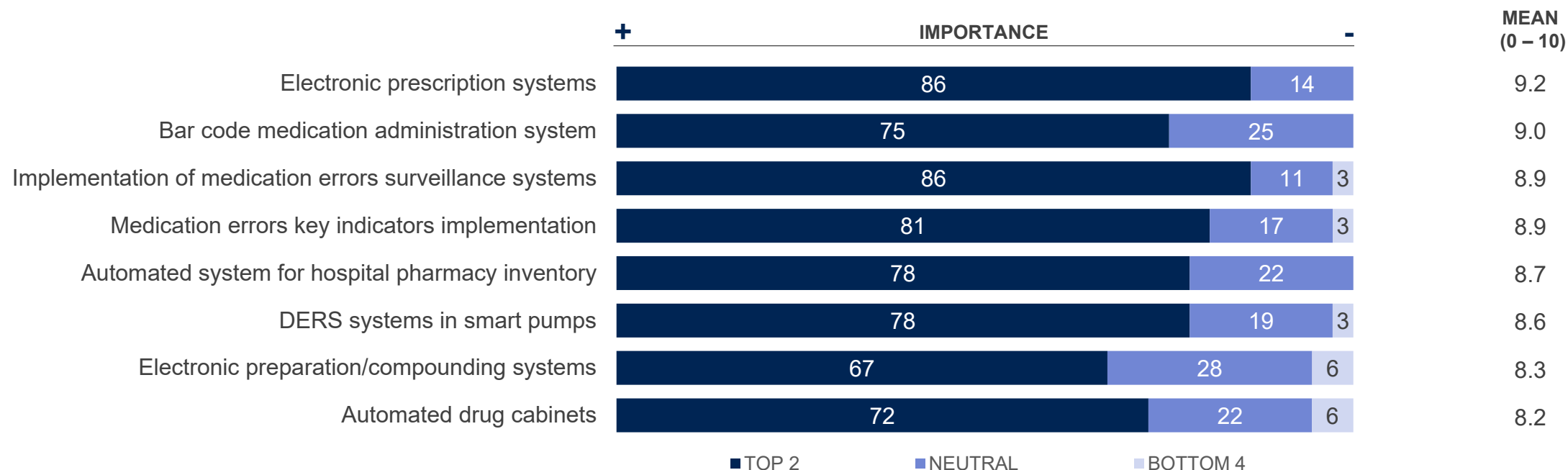
**FUTURE**

**6**

# FUTURE PLANS INCLUDE MANY AREAS THAT REQUIRE IMPROVEMENT TO REDUCE MEDICATION ERRORS

- Figures expressed as a % -

## FUTURE PLANS



36. In your opinion, to what extent do you think it is important to improve these areas in order to reduce medication errors in your hospital?

Base: total sample (36)

# 3 IN 4 PHARMACISTS BELIEVE THERE ARE IMPORTANT AREAS TO IMPROVE IN ORDER TO REDUCE MEs



- Training in the area of drug administration to newly arrived teams of nurses - in a cyclical way
- Elimination of manual prescription, especially in the field of oncology
- Bar code or data matrix reading in administration, mainly in oncology, but to be applied wherever it occurs
- Central area for monitoring of errors in medication

Statements from Hospital Chief Pharmacists from Portugal



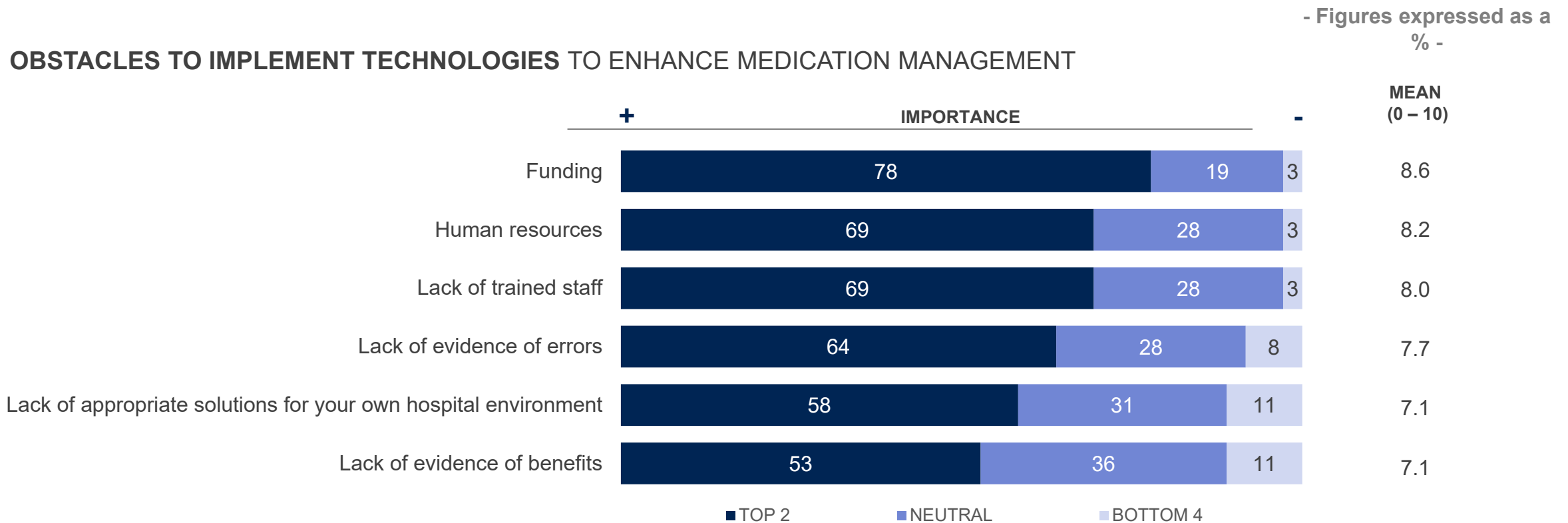
## 75%

Of pharmacists believe there are important **areas to improve** in order to **reduce medication errors** in their hospital

36a. Are there any important areas to improve in order to reduce medication errors in your hospital? Base: total sample (36)

36b. More specifically, to what extent do you think it is important to improve these areas in order to reduce medication errors in your hospital? Base: There are important areas to improve in order to reduce medication errors (36)

# FUNDING IS THE MAIN BARRIER FOR IMPLEMENTING THESE IMPROVEMENTS



37. On a scale from 0 to 10, where 0 is “not at all important” and 10 is “extremely important”, what following criteria are obstacles to implementing technologies to enhance your medication management?

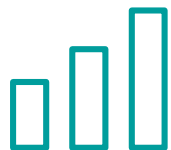
Base: total sample (36)

# CONCLUSIONS AND RECOMMENDATIONS

# 7

# EXECUTIVE SUMMARY - PORTUGAL

## MEDICATION ERRORS



**67% of hospitals are accredited but 21% do not include MEs. Most MEs are recorded in CIRS or local data systems with 14% not recorded me databases. MEs are barely available to the public (6%). There is a low availability of me databases for sharing continual improvement initiatives. 53% of hospitals are not aware of the number of MEs being registered**

53% of MEs are tracked centrally but 36% do not routinely track MEs. Data monitoring of MEs and AEs are mainly used for root cause analysis. MEs occur at all stages but mainly at electronic prescription and administration stages. Environmental, staffing or workflow problems are the main causes of MEs. Open discussions are the best solution for continual improvement. However, over 1 in 2 hospitals state that little or no action is taken to improve medication safety performance. 44% of hospitals have a trained HCP to detect MEs and enhance patient safety.

## INFORMATION SYSTEMS



**Most hospitals have an electronic medical record system which is not available for all patients and 57% integrated with primary care**

Most hospitals have an electronic prescribing system (EPS) available. However, there is room for improving the integration with clinical decision support systems. EPSs are available for most patients. Electronic prescriptions are not always validated by a pharmacist. The EPS is variably integrated with other systems. Automated drug cabinets are mainly available in central pharmacy and ICU. Only 36% of hospitals implement nursing standard operating procedures for aseptic or injectable preparation on the wards. Only 18% of infusion medication is prepared in central pharmacy.

## TECHNOLOGY



**Not all hospitals have an electronic system for monitoring administration. Bar coding to verify drug selection prior to dispensing or refilling automated cabinets is low. The electronic bar code system / electronic system for checking patient and medication and IV dose are mainly used in oncology, ICU and central pharmacy**

Double nurse check when electronic checking systems are not available, is mostly not implemented. Very limited availability of near-miss infusion medication errors tracked via DERS. Most hospitals do not monitor infusions from a central location. Almost all hospitals have unit dose medication processes. Manual shelves and pharmacy information systems are mostly used to manage pharmacy inventory. 19% have pharmacy robots.

## FUTURE



**Electronic prescription and bar code medication administration and ME surveillance systems are the most important areas to reduce MEs**

3 in 4 pharmacists believe there are important areas to improve in order to reduce MEs (e.g. Training in the area of drug administration to newly arrived teams of nurses - in a cyclical way, elimination of manual prescription especially in the field of oncology, bar code or data matrix reading in administration mainly in oncology, but to be applied wherever it occurs, central area for monitoring errors in medication). Funding, human resources and lack of trained staff are the main barrier for implementing these improvements.

**BE  
SURE.  
GO  
FURTHER.**

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