eahp
european association
of hospital pharmacists

SIG SPECIAL INTEREST GROUP | SURVEY REPORT

Automated Medication Management

October 2023

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The work of this Special Interest Group (SIG) was financially supported by Omnicell

Foreword from EAHP President Andras Süle

Hospital pharmacists currently deal with a lot of disconnected and manual systems when managing medication. Even those with a digitised prescribing administration process often rely on human intervention to manage elements of the dispensing process that sits at the centre of the medication management process. Thus, the questions is if this could lead to difficulty in tracking medication inventory and/or an increased risk to manual back office and administration tasks.

Europe has no uniform standard of care approach for managing all aspects of medication within the hospital setting. While some countries are further ahead than others, there is no consistent guidelines or ways to share best practice. Thus, EAHP decided to set up a Special Interest Group (SIG) to further investigate the benefits of automation medication management.

On behalf of EAHP, I would like to thank all SIG members for their valuable contributions and their engagement to this Survey report which helped better understand the status of automation in Europe. Also, I would like to thank Omnicell for financially supporting the work of this SIG and for continuing supporting the work of the SIG during the second phase that kicked off in May 2023, as the SIG will now work on developing a European Autonomous Framework

My thanks also towards the chief pharmacists across Europe and EAHP's member associations that contributed to the survey activity of this SIG on Spring 2022.

EAHP President
Andras Süle

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Background

To better understand the benefits of automating medication management, particularly around the medication preparation/compounding/dispensing process, and how technology best meets the needs of different hospital pharmacy workflows, the European Association of Hospital Pharmacists (EAHP) has established a Special Interest Group (SIG) on Automated Medication Management. Its work was sponsored by a grant from Omnicell.

The SIG on Automated Medication Management was tasked with investigating the potential benefits of automation in the hospital setting in terms of patient safety, length of stay and staff efficiency for patient care and medication inventory management. Particular focus was put on addressing how automation in dispensing can help achieve one of the key objectives of the World Health Organization (WHO) – reducing medication errors. Also, the potential of automation for helping hospitals reach recognised standards including HIMSS level 6/7 and JCI accreditation was looked at.

The work of the SIG focused on two distinct areas, creating the autonomous pharmacy vision and mapping the current situation in Europe. The latter was achieved by means of a survey that was shared with individual hospital pharmacists. The creation of the autonomous pharmacy vision is being conducted by SIG members during the second phase of the SIG that kicked off in May 2023.

European Statements of Hospital Pharmacy

In 2014, EAHP adopted the European Statements of Hospital Pharmacy[1] that express commonly agreed objectives which every European health system should aim for in the delivery of hospital pharmacy services. Automated medication management is linked to a number of European Statements of Hospital Pharmacy cited verbatim, below:

Statement 1.7 *"Hospital pharmacists must be involved in the design, specification of parameters and evaluation of ICT within the medicines processes. This will ensure that pharmacy services are integrated within the general Information and Communication Technology (ICT) framework of the hospital including electronic health (eHealth) and mobile health (mHealth) procedures."*

[1] www.statements.eahp.eu

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Statement 2.6 *"Hospital pharmacies should have responsibility for all medicines logistics in hospitals. This includes proper storage, preparation, dispensing, distribution, and disposal conditions for all medicines, including investigational medicines."*

Statement 5.5 *"Hospital pharmacists should help to decrease the risk of medication errors by disseminating evidence-based approaches to error reduction including computerized decision support."*

Statement 5.7 *"Hospital pharmacists should ensure that the medicines administration process is designed such that transcription steps between the original prescription and the medicines administration record are eliminated."*

Statement 5.10 *"Hospital pharmacists should ensure that medicines stored throughout the hospital are packaged and labelled so to assure identification, maintain integrity until immediately prior to use and permit correct administration."*

Statement 5.11 *"Hospital pharmacists should support and implement systems that allow traceability of all medicines dispensed by the pharmacy."*

Survey design

The SIG conducted a Survey to analyse and assess the status of automated medication management in Europe and to investigate the benefits of automating medication management, particularly around the medication preparation/compounding/dispensing process, and how technology best meets the needs of different hospital pharmacy workflows.

This Survey was designed to help with the collection of views and opinions on the current and future use of Automated Medication Management solutions.

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Respondents

The Survey was available to individual pharmacists from EAHP's member countries via EAHP's 35 nationals' associations. In addition, the Survey was available on the EAHP website and promoted via social media from April to June 2022. As the number of respondents was not enough for the SIG, the Survey was extended until the 31st of July. In total, there were 461 respondents with only 264 respondents going through the entire Survey.

Due to the low number of responses the survey, these results reflect a picture of the situation in Europe but cannot be taken as representing the complete status of automation in the EAHP countries.

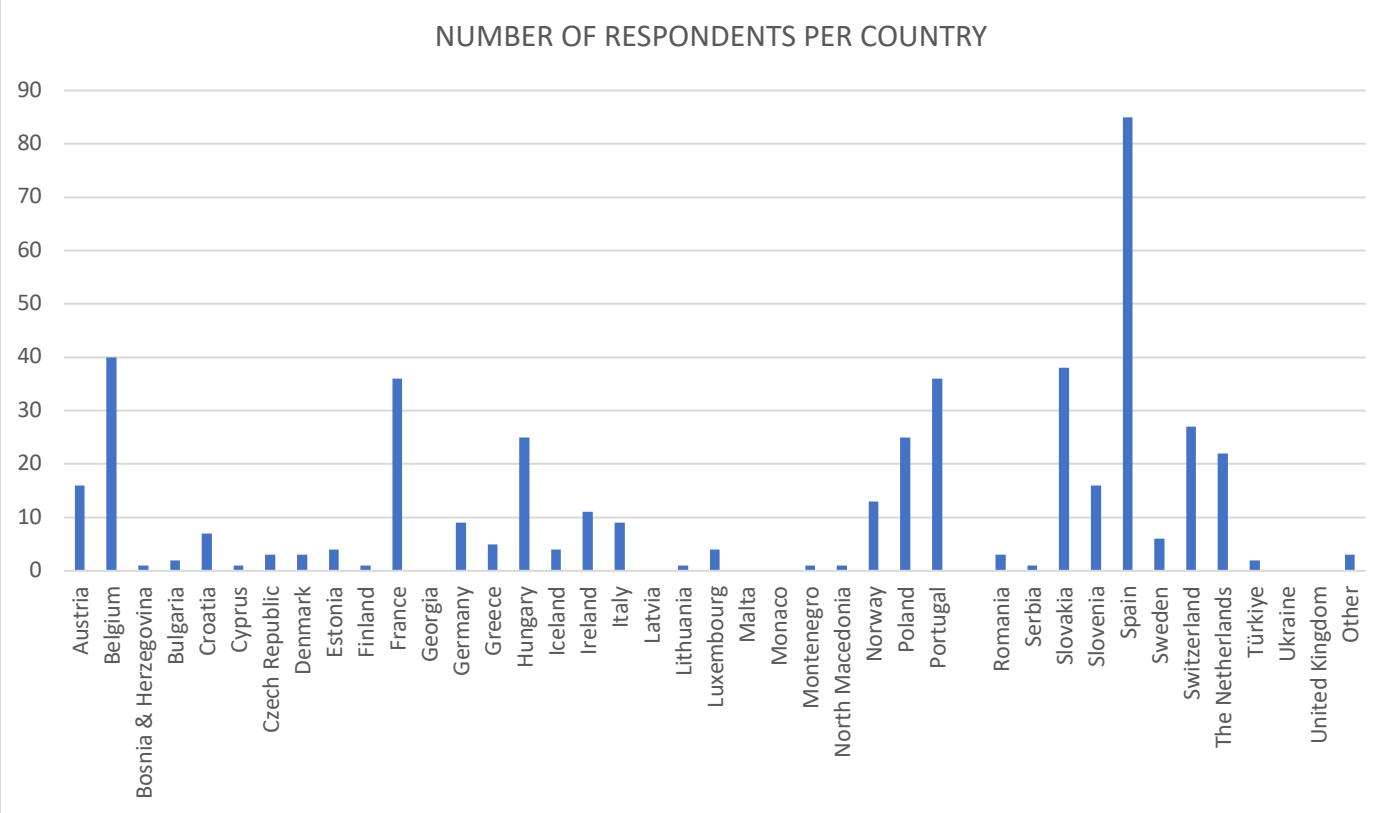

Figure 1: Percentages of respondents (n=461) to the Question 1 "In which country…?"

The SIG decided to include several questions to better understand the infrastructure and the nature of the hospitals where the respondents worked, including questions like the number of staff and number of beds. 56% (n=252/451) of the respondents worked in a General Hospital with 19% (n=86/451) of them working in a teaching/university hospital and 6% (n=27/451) came from a private hospital.

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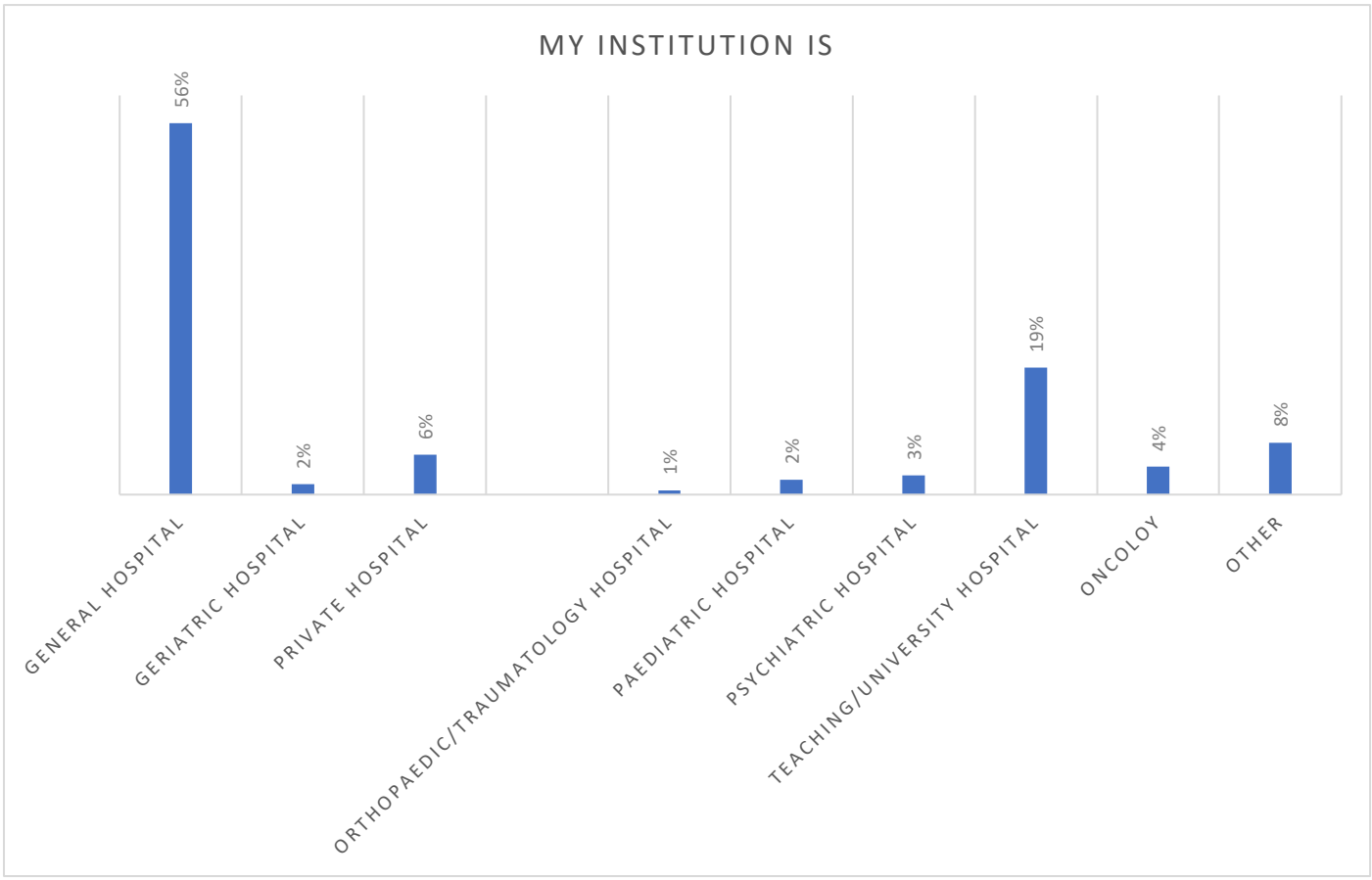

Figure 2: Percentage of respondents (n=451) to the question 2 "My institution is…"

When asked if their institution have an outpatient clinic, 86% (n=386/447) of the survey respondents answered "yes" while 14% (n=61/447) answered "no".

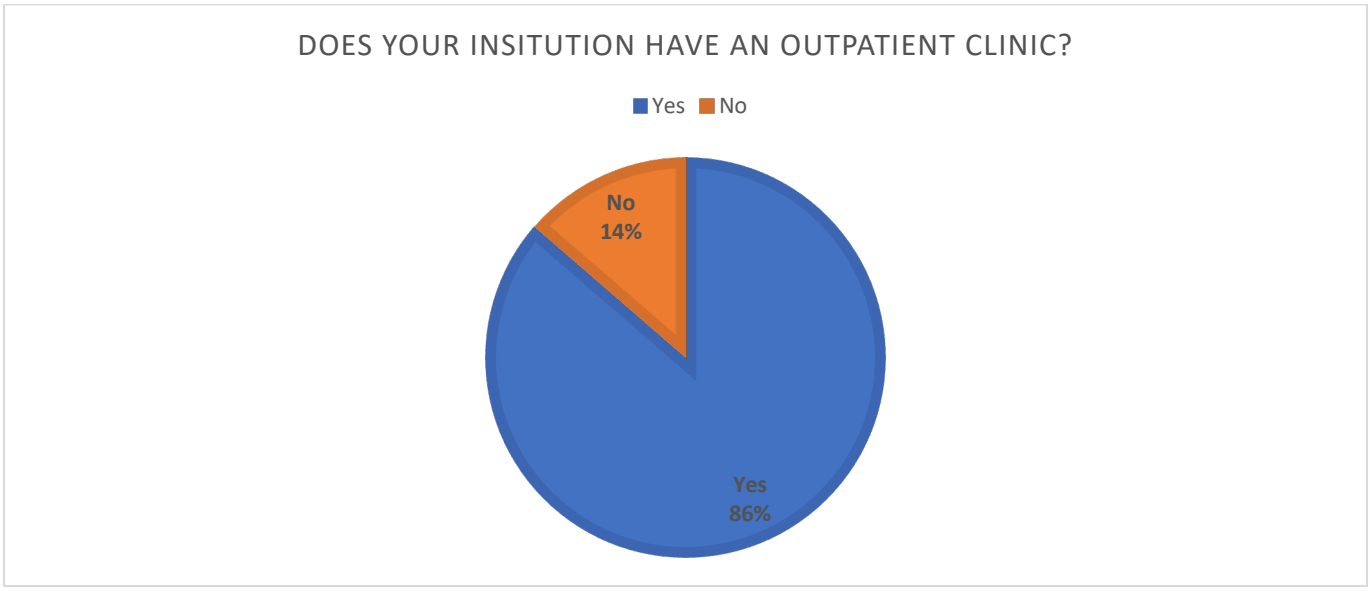

Figure 3: Percentage of respondents (n=447) for the Question 3 "Does your institution have an…"

Respondents also answered to several questions regarding the number of staff working within their pharmacies. The average of pharmacists working per hospital was 10,8 with an average of 3,2 pharmacists

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working in the wards. In addition, the average number of technicians was 18 with an average of 4,7 administrative support staff.

Survey respondents were also asked to provide information on the operating hours of the pharmacies from their institutions. Respondents were able to select more than one answer. Most of the pharmacies (77% (n=327/426) stated that their pharmacies open during the day from Monday to Friday with only 19% (n=80/426) opening during the weekend.

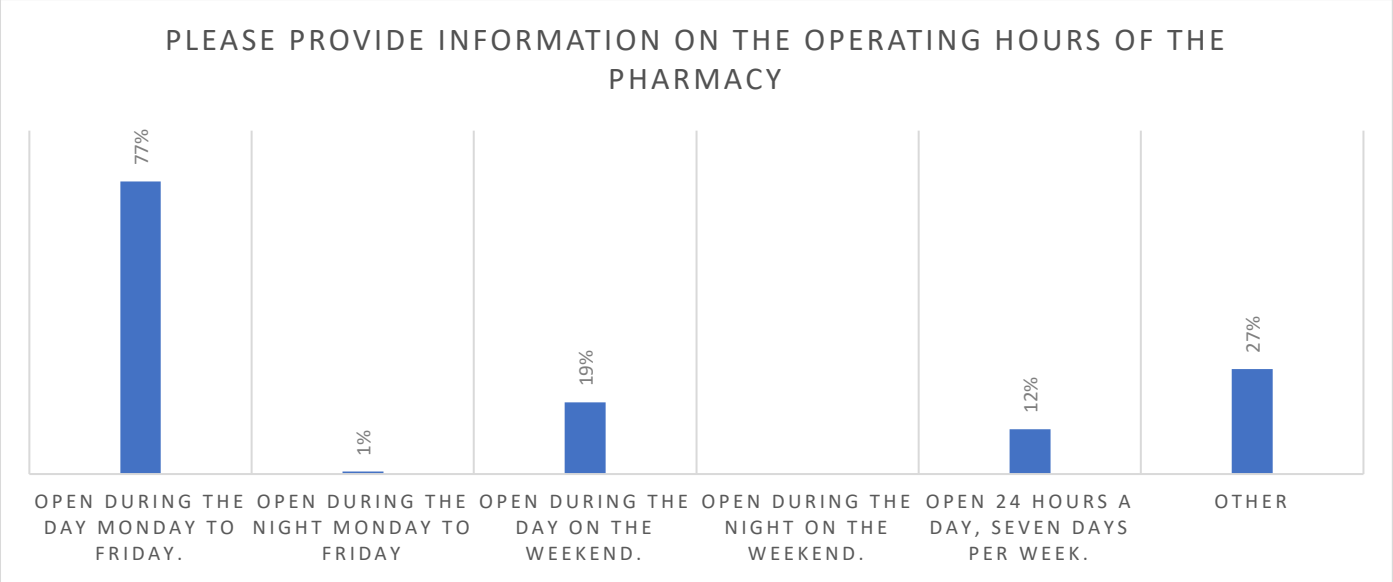

Figure 4: Percentage of respondents (n=426) to the question 8 "Please provide information on the operating hours of the pharmacy…" (tick all that apply question)

Infrastructure

The SIG asked Survey respondents to indicate where the patient specific IV preparation for ongoing orders take place within their hospitals. Survey participants were able to select more than one option per question. The two main preparations taking place in the central pharmacy are IV preparation for chemotherapy (67%(n=244/362) and total parenteral nutrition (TPN) IV preparation (43%(n=157/362).

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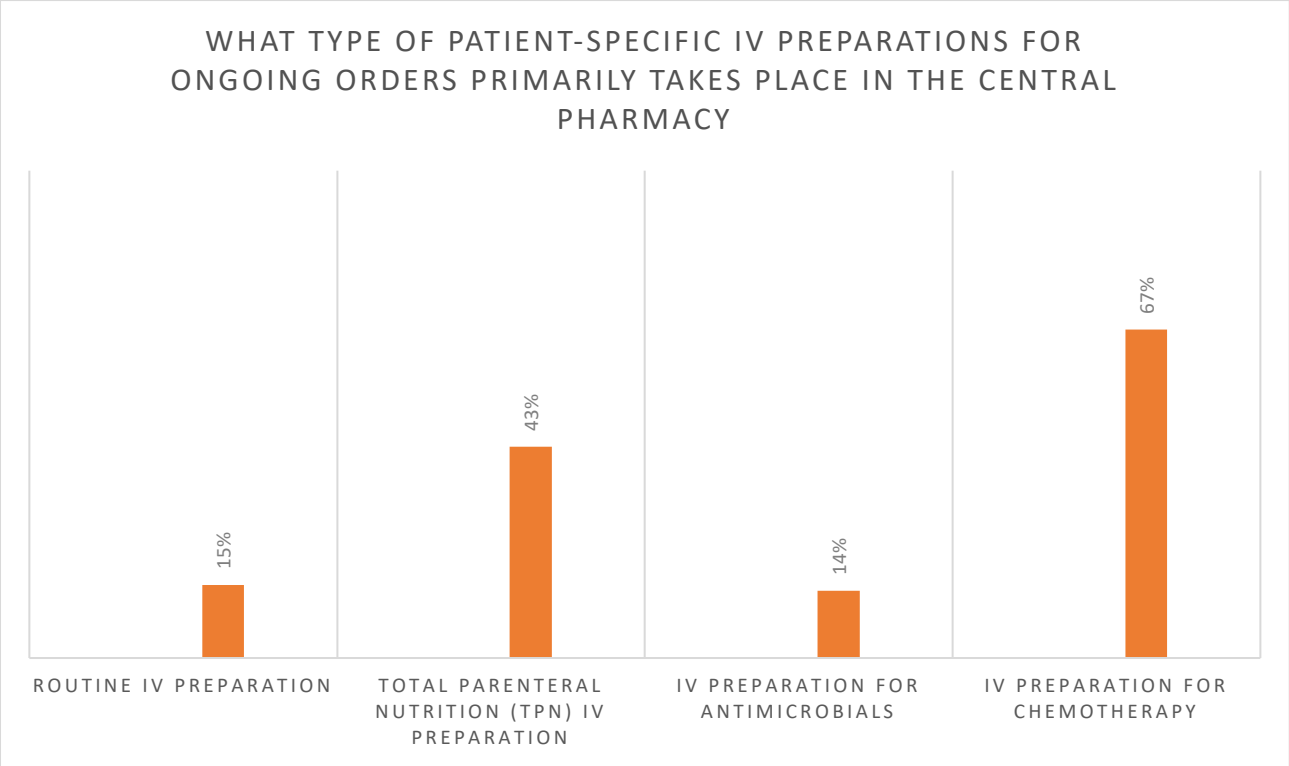

Figure 5: Percentage of respondents (n=362) to the question 9a" Where does patient specific IV preparation for ongoing orders primarily take place…? (Tick all that apply question).

Responses were different when asked about the preparation for ongoing orders in the ward. In this case 87% (n=316/362) of the preparations are routine IV preparations and 30% (109/362) are total parenteral nutrition (TPN) IV preparations. In the ward only 12% (n=42/362) of the preparations are for Antimicrobials and 12% (n=42/362) are preparations for chemotherapy.

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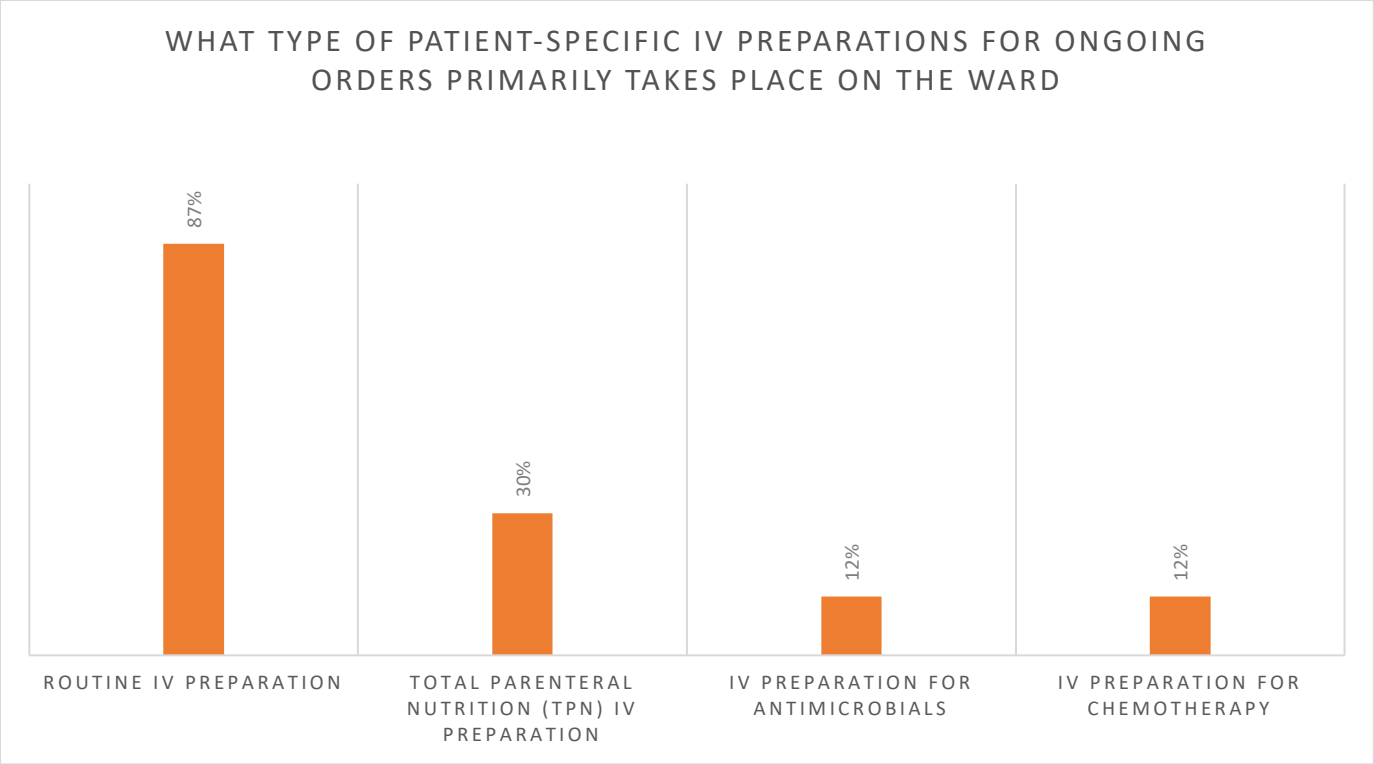

Figure 6: Percentage of respondents (n=362) to the question 9b" Where does patient specific IV preparation for ongoing orders primarily take place…? (tick all that apply question)

When asked about outsourced preparations, 30% (n=109/362) of them were preparations for chemotherapy with only 9% (n=34/362) of the preparations being total parenteral nutrition (TPN) IV preparations.

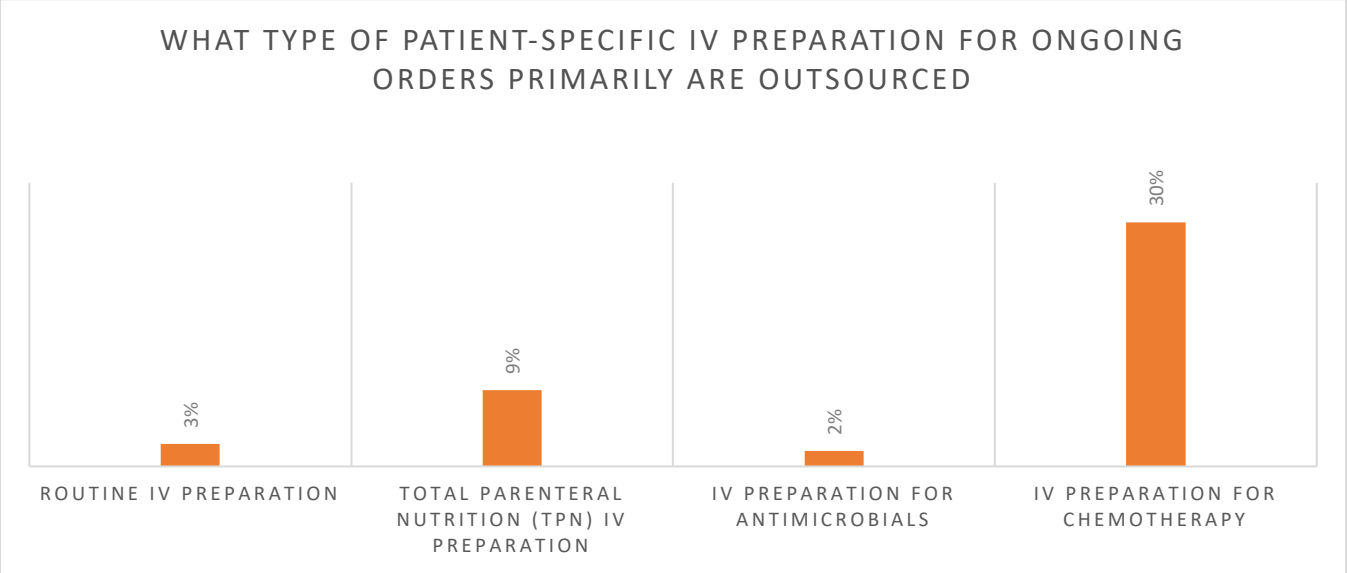

Figure 7: Percentage of respondents (n=362) to the question 9c" Where does patient specific IV preparation for ongoing orders primarily take place…? (tick all that apply question).

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Survey participants were also given the opportunity to indicate other places/environments (but not outsourced) where these preparations took place. 6% (n=24/362) of the total parenteral nutrition IV preparations, 4% (n=13/362) of IV preparation for antimicrobials, 4% (n=13/362) of the IV preparation for chemotherapies and 3% (n=11/362) of the routine IV preparations were prepared in locations others than the central pharmacy or the ward. These preparations were not outsourced either.

Survey participants were then asked about the same question but for non-patient specific IV Preparations. Survey respondents were also able to select more than one option per question.

The two main preparations taking place in the central pharmacy are IV preparations for chemotherapy, with 30% (n=108/362) and total parenteral nutrition IV preparations with 25% (n=89/362). In addition, the two main preparations for non-patient specific in the wards are routine IV preparations 44% (n=158/362) and IV preparation for antimicrobials is 32% (n=117/362)

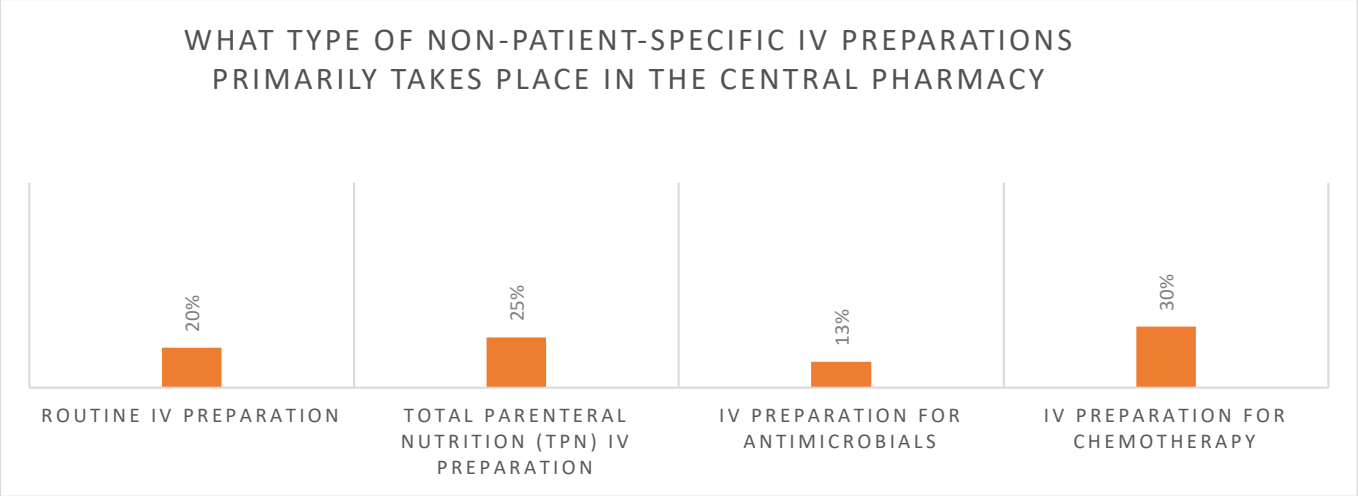

Figure 8: Percentage of respondents (n=362) to the question 10.a" Where does non-patient specific IV preparation for ongoing orders primarily take place…? (Tick all that apply question)

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The same question was then asked for the preparations that take place on the ward.

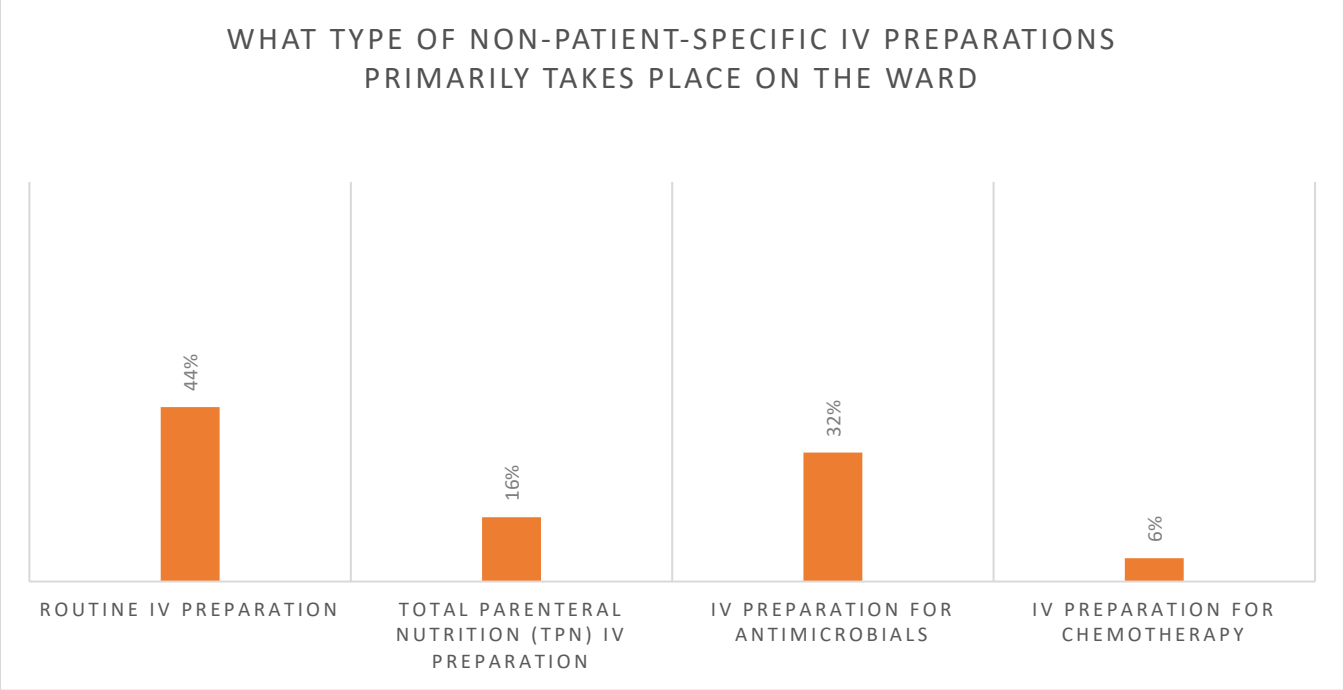

Figure 9: Percentage of respondents (n=362) to the question 10.b" Where does non-patient specific IV preparation for ongoing orders primarily take place…? (tick all that apply)

As for Question 8, survey respondents also had the opportunity to include the preparations that were outsourced. For these hospitals only 6% (n=23/362) of the total parenteral nutrition IV preparations were outsourced.

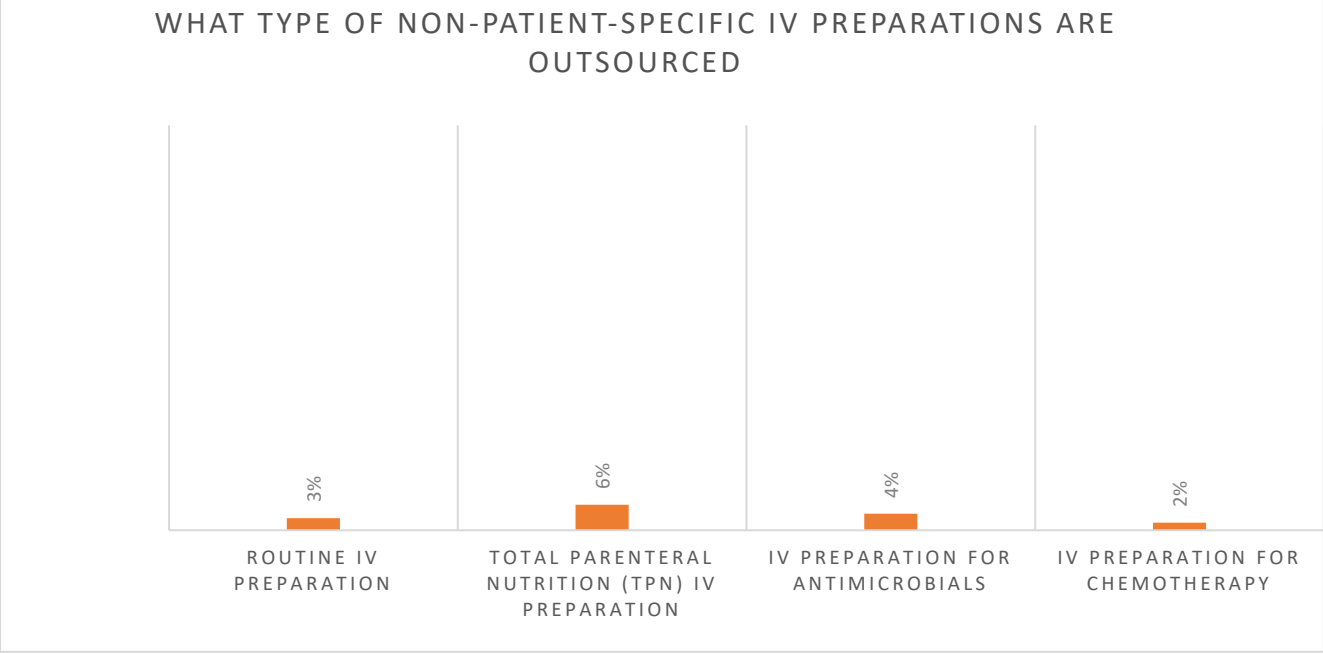

Figure 10: Percentage of respondents (n=362) to the question 10.c" Where does non-patient specific IV preparation for ongoing orders primarily take place…? (tick all that apply)

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Survey respondents were asked what type of medication distribution model is used in your institution for general medicine/surgery, the ICU, and other areas. When asked about the manual ward stocks, 65% (n=237/362) use it in the general medicine/surgery wards and 62% (n=225/362) use it in the ICUs. 43% (n=156/362) of Survey respondents stated that they use this model elsewhere.

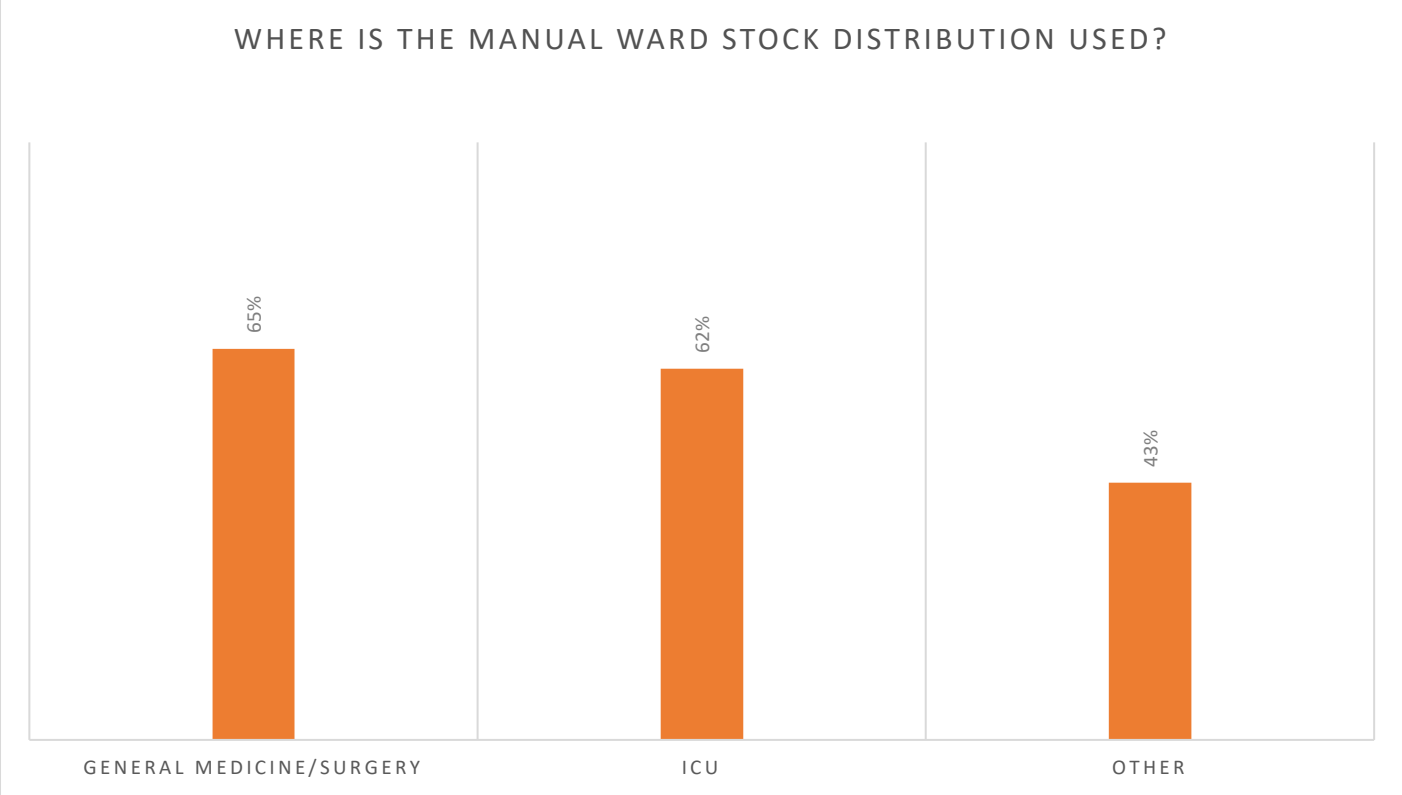

Figure 11: Percentage of respondents (n=362) to the question 11" What type of medication distribution model is used in your institution for general medicine/surgery…" (tick all that apply).

When asked about decentralised automated dispensing cabinets (ADCs), 22%(n=78/362) are used it in the ICUs and 16% (n=59/362) are used for general medicine/surgery practice.

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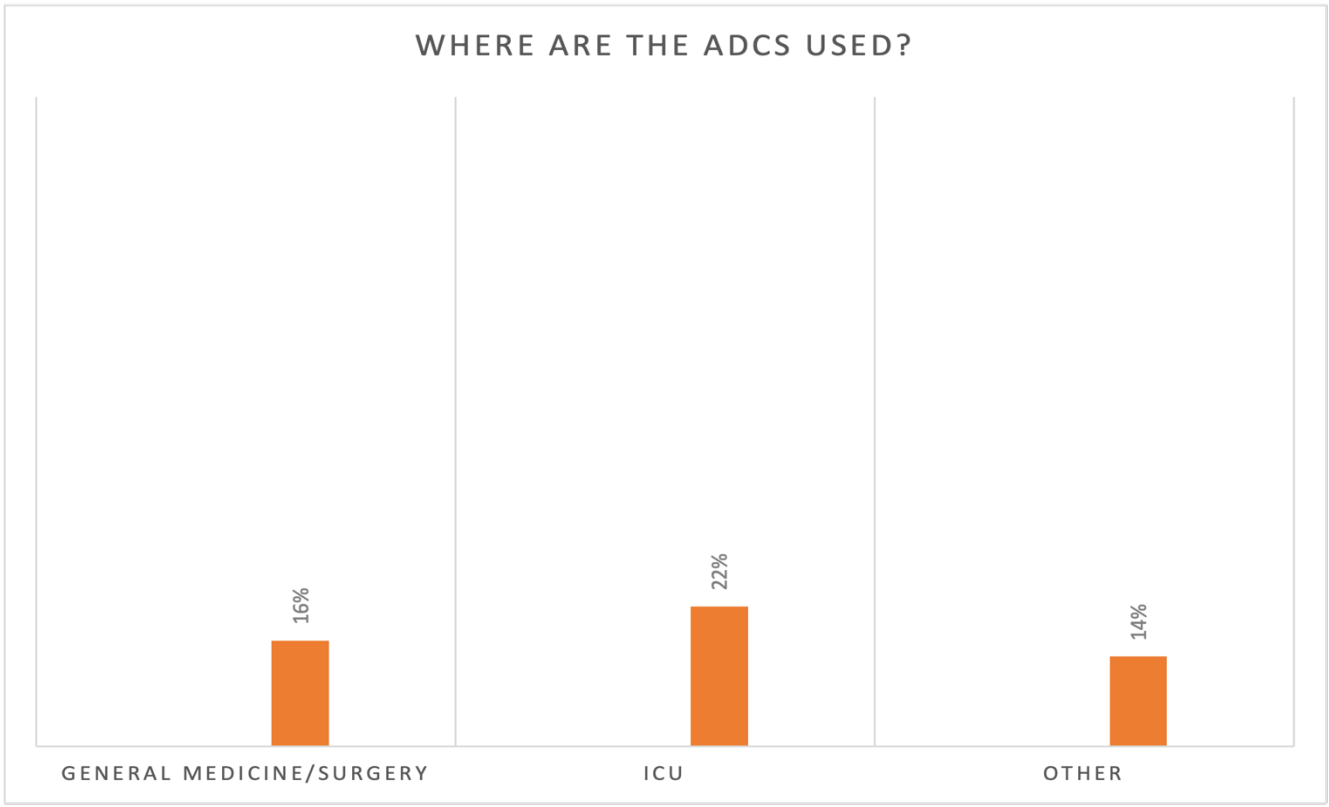

Figure 12: Percentage of respondents (n=362) to the question 11" What type of medication distribution model is used in your institution for general medicine/surgery…"

In addition, 27% (n=98/362) of the survey respondent used manual unit dose preparation in central pharmacy for general medicine/surgery while in this case 14% (n=49/362) used this distribution model for the ICUs.

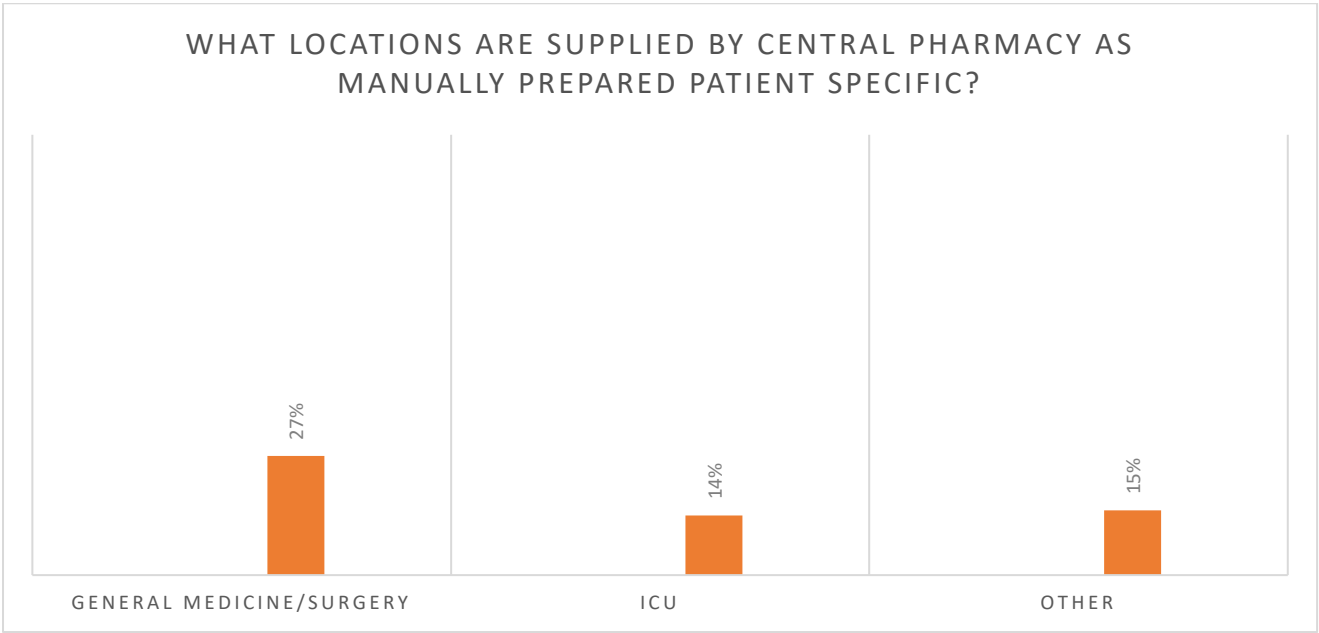

Figure 13: Percentage of respondents (n=362) to the question 11" What type of medication distribution model is used in your institution for general medicine/surgery…" (tick all that apply)

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Finally, when asked about automated non-patient specific unit dose preparation in central pharmacy, 12% (n=44/362) respondents stated that they use this model for general medicines/surgery while 9% (n=34/362) use it for the ICUs.

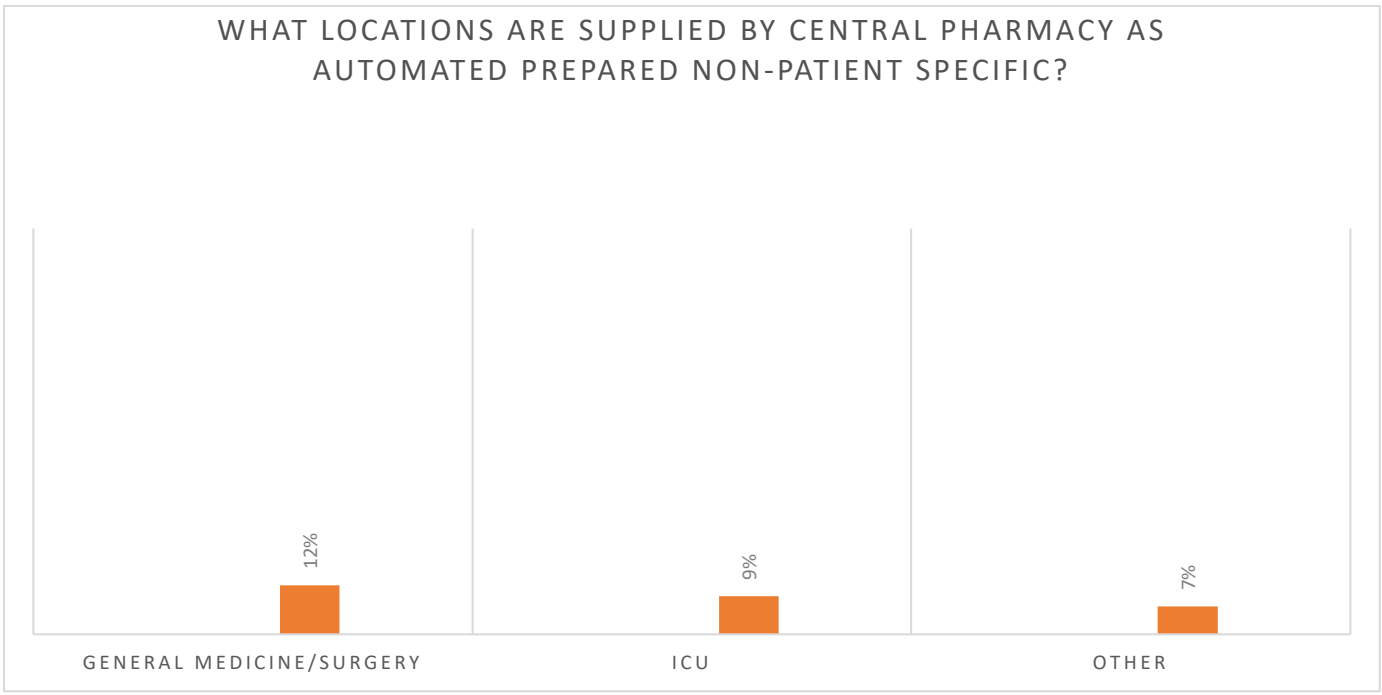

Figure 14a: Percentage of respondents (n=362) to the question 11" What type of medication distribution model is used in your institution for general medicine/surgery…" (tick all that apply)

On the other hand. 21% of the respondents (n=76/362) use automated patient specific unit dose preparation in central pharmacy and 7% (n=24/362) use this model for the ICUs.

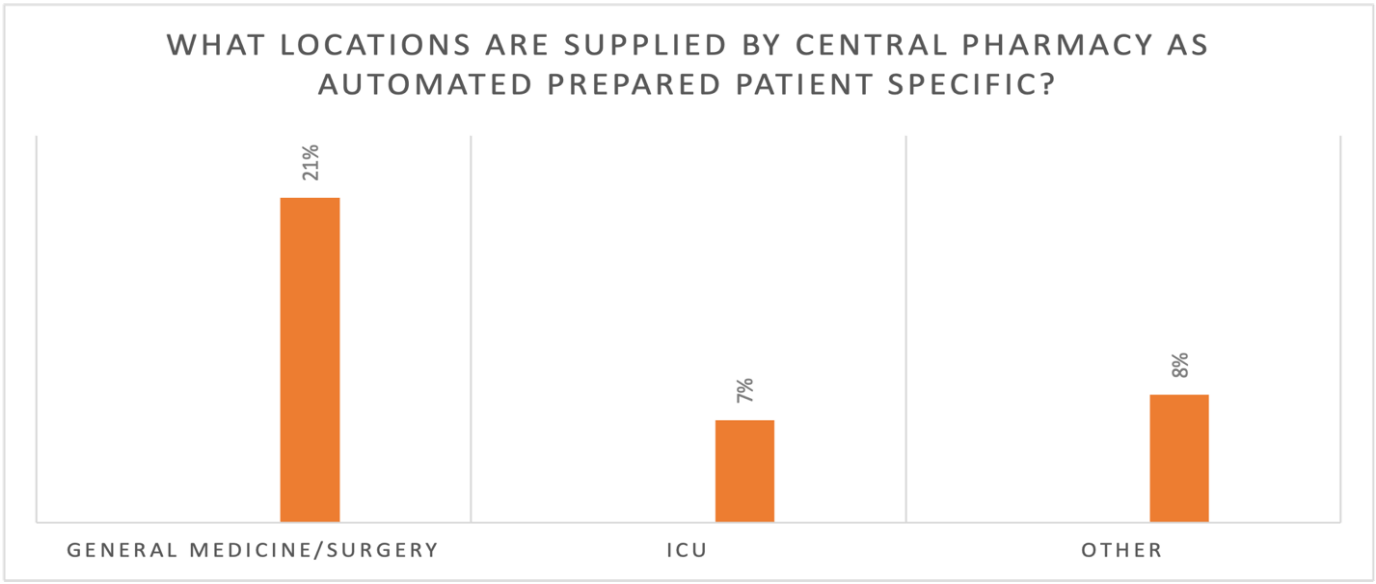

Figure 14b: Percentage of respondents (n=362) to the question 11" What type of medication distribution model is used in your institution for general medicine/surgery…" (tick all that apply)

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Computerised physician order entry (CPOE)

The SIG on Automated Medication Management also wanted to investigate the use of CPOE within the hospital that participated in the Survey. 40% (n=142/357) of the Survey respondents explained that CPOE is already widely used within their hospitals while 30% (n=106/357) explained that their hospitals use CPOE, and their hospitals plan to expand its use.

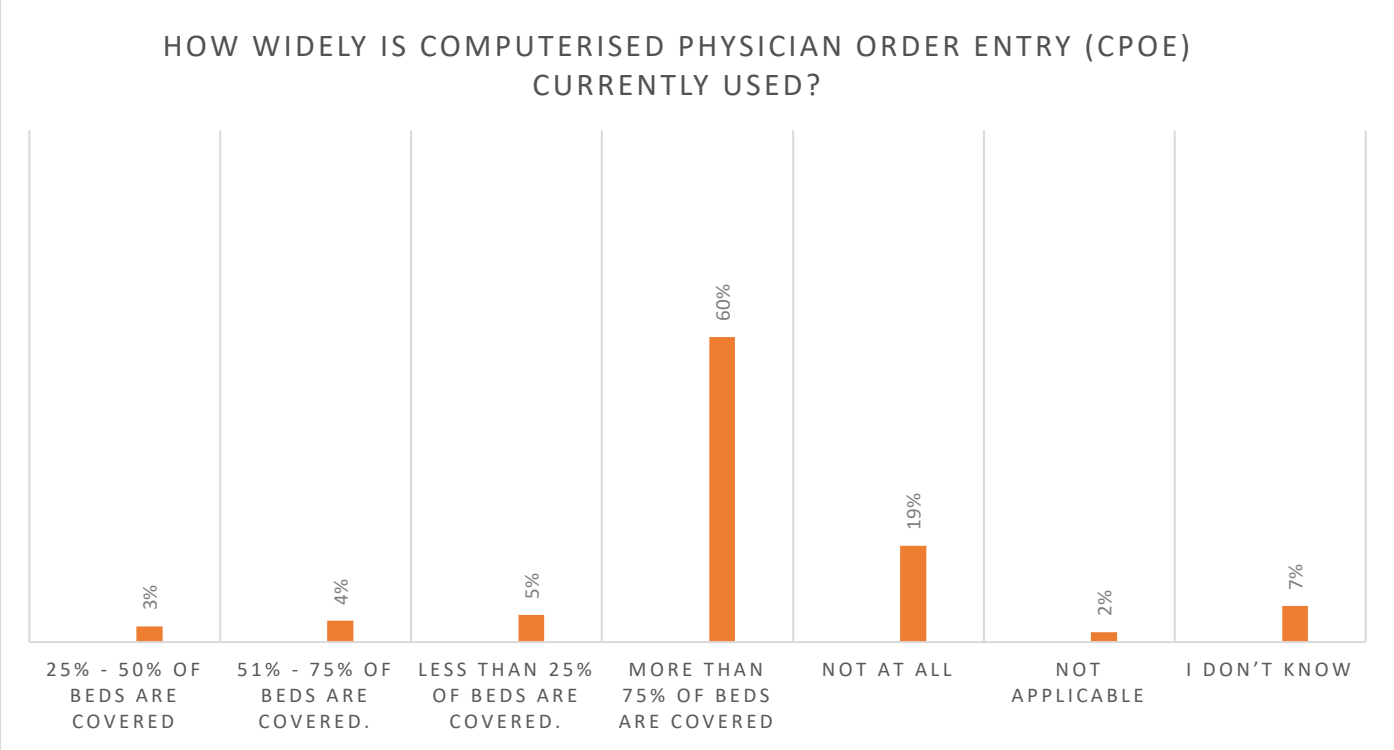

Figure 15: Percentage of respondents (n=357) to the question 13 "How widely is computerized physician order entry (CPOE) currently used…"

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13% (n=48/357) of the survey respondents' hospitals don't use CPOE but they plan to implement this in the next 5 years while 11% (n=38/357) do not use CPOE and don't have plans to implement this in the next 5 years. 6% (23/357) of Survey respondents didn't know if their hospitals use CPOE.

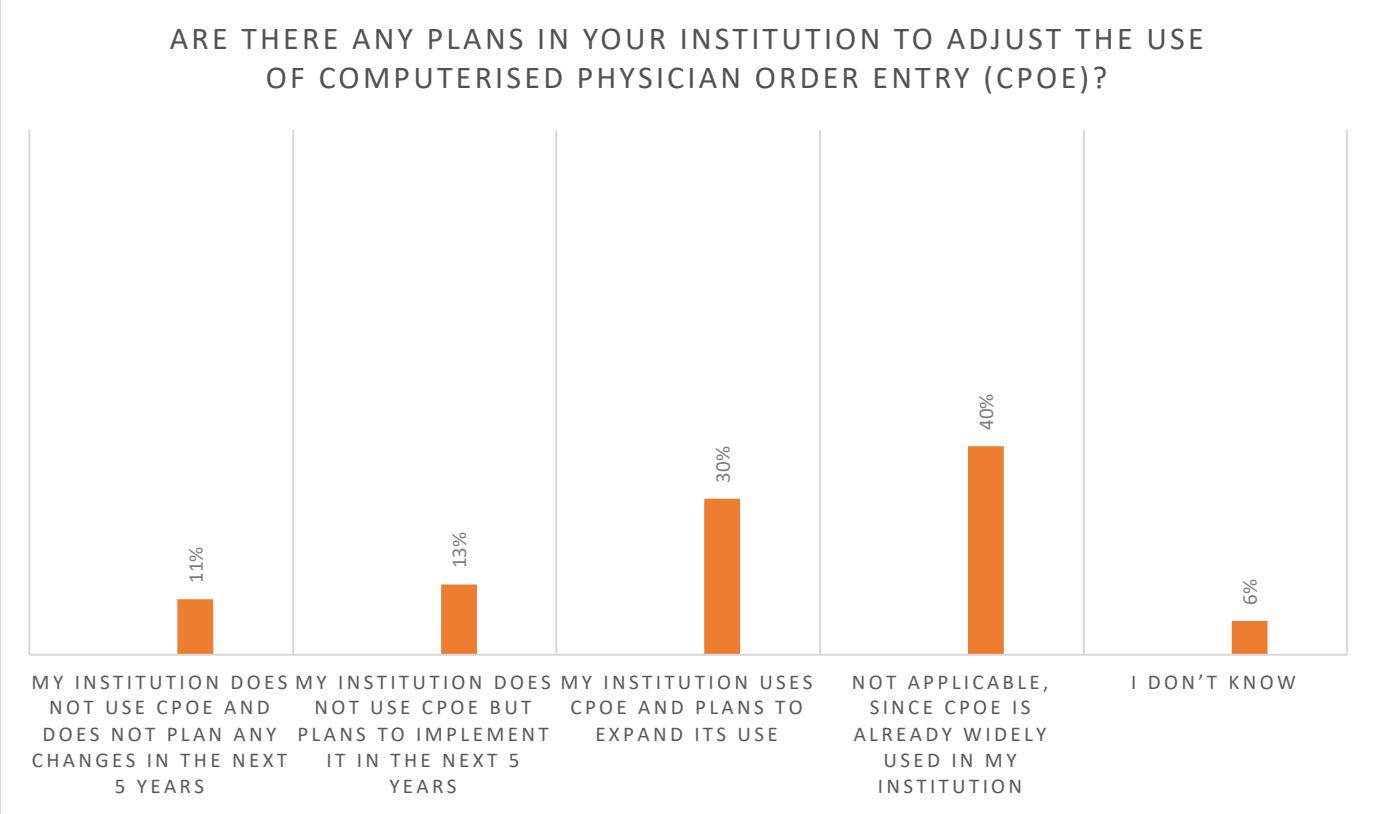

Figure 16: Percentage of respondents (n=357) to the question 12 "Are there any plans in your…"

Electronic Medication Administration Record (eMAR)

The following question asked survey respondents if there are there any plans in their institution to adjust the use of eMAR (electronic medication administration record) without barcoded medication administration. 26% (n=96/357) stated that eMAR without barcoded medication administration is already widely used in their institutions and 18% (53/357) use eMAR without barcoded medication administration and plans to expand its use.

When asked how widely eMAR without barcoded medication administration is currently used within their institutions, 39% (n=139/357) answered that more than 75% of the beds use it. On the other hand, 34% (n=121/357) of the hospitals that participate in the survey currently don't use eMAR without barcoded medication at all.

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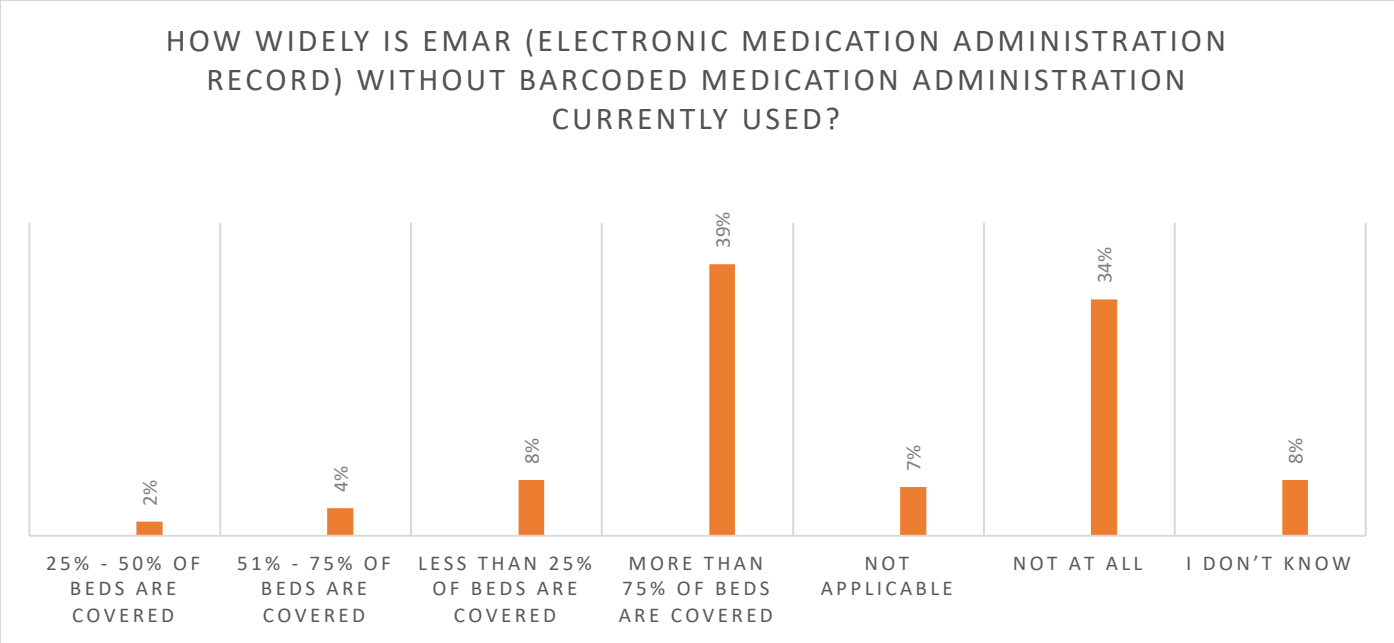

Figure 17: Percentage of respondents (n=357) that answered to question 15 "How widely is eMAR (electronic medication administration record) WITHOUT barcoded medication…"

For the respondents that don't use eMAR, 27% (n=96/357) don't plan any adjustments in the next 3 years while 11% (n=40/357) plan to implement eMAR in the next 3 years. 18% (n=64/357) of the Survey respondents didn't know about the use of eMAR.

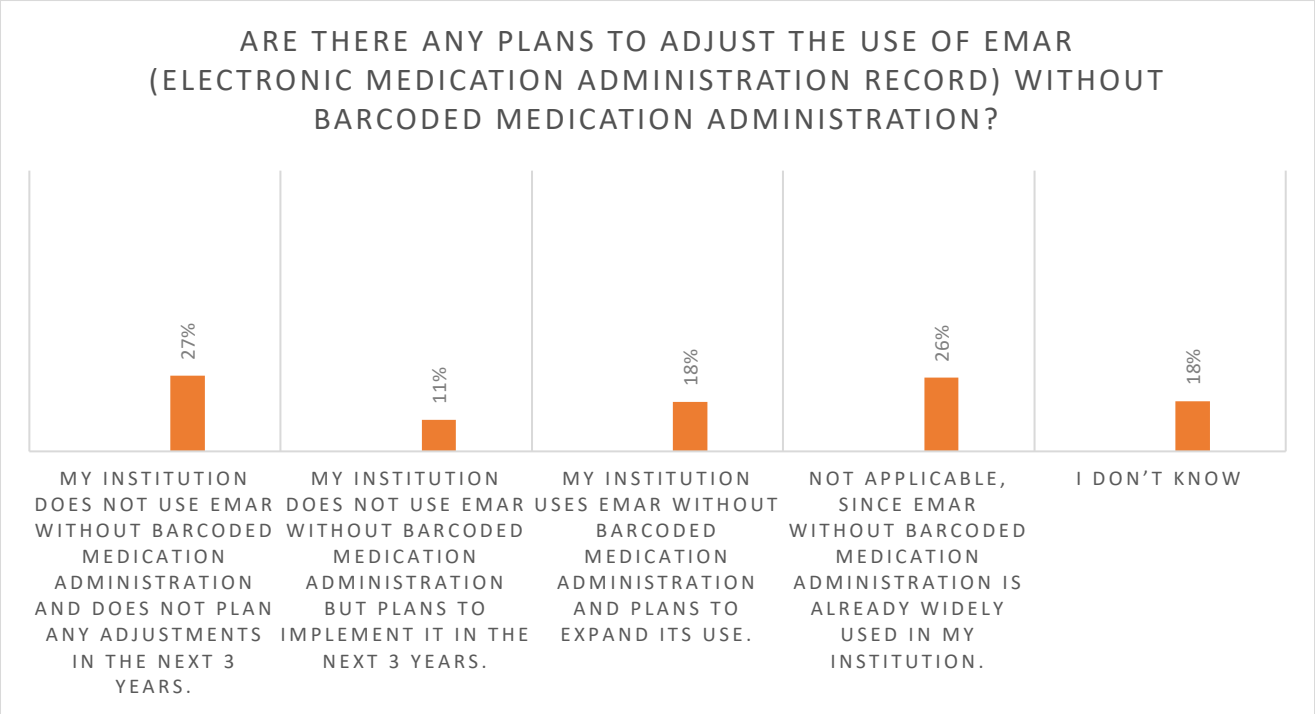

Figure 18: Percentage of respondents (n=357) to question 14 "Are there any plans in your institution to adjust the use of…"

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The SIG also asked the same questions as before but for the plans to adjust the use of eMAR with barcoded medication administration. In this case, only 4% (n=16/357) of the hospitals widely use eMAR with barcoded medication.

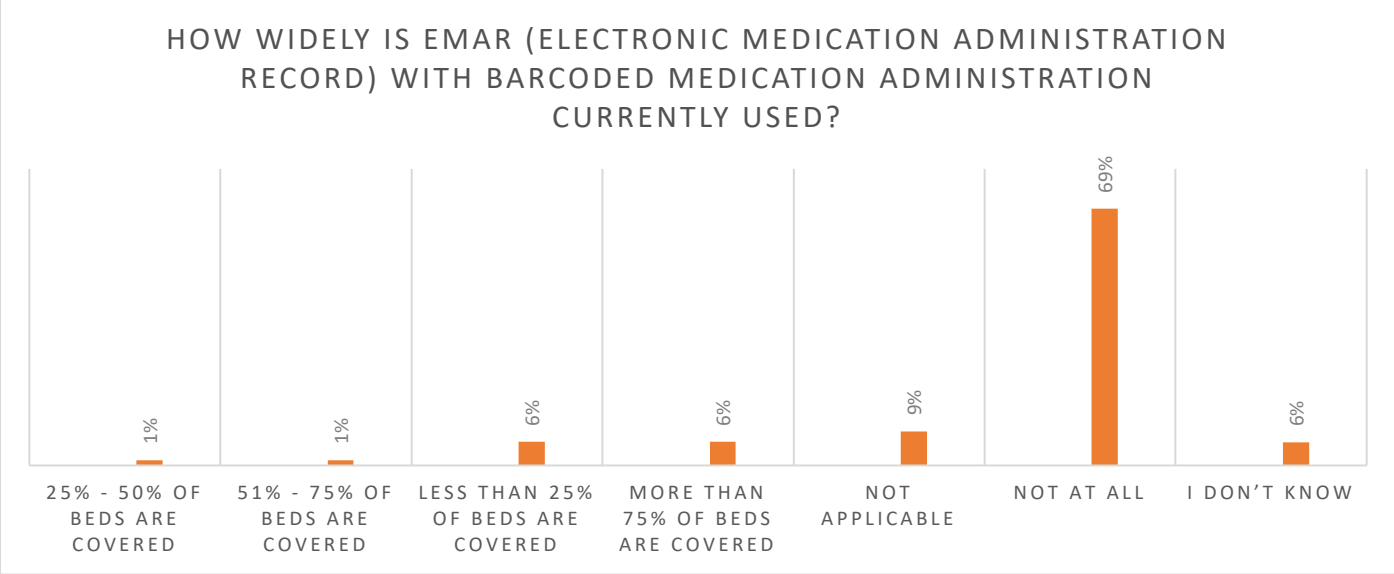

Figure 19: Percentage (n=357) of respondents to the question 17 "How widely is the eMAR (electronic medication administration record) with…"

In addition, 27% (n=98/357) of the hospitals plan to implement this within the next 3 years while 35% (n=124/357) of the hospitals that answered to this question don't use eMAR with barcoded medication and don't plan to implement this in the next 3 years

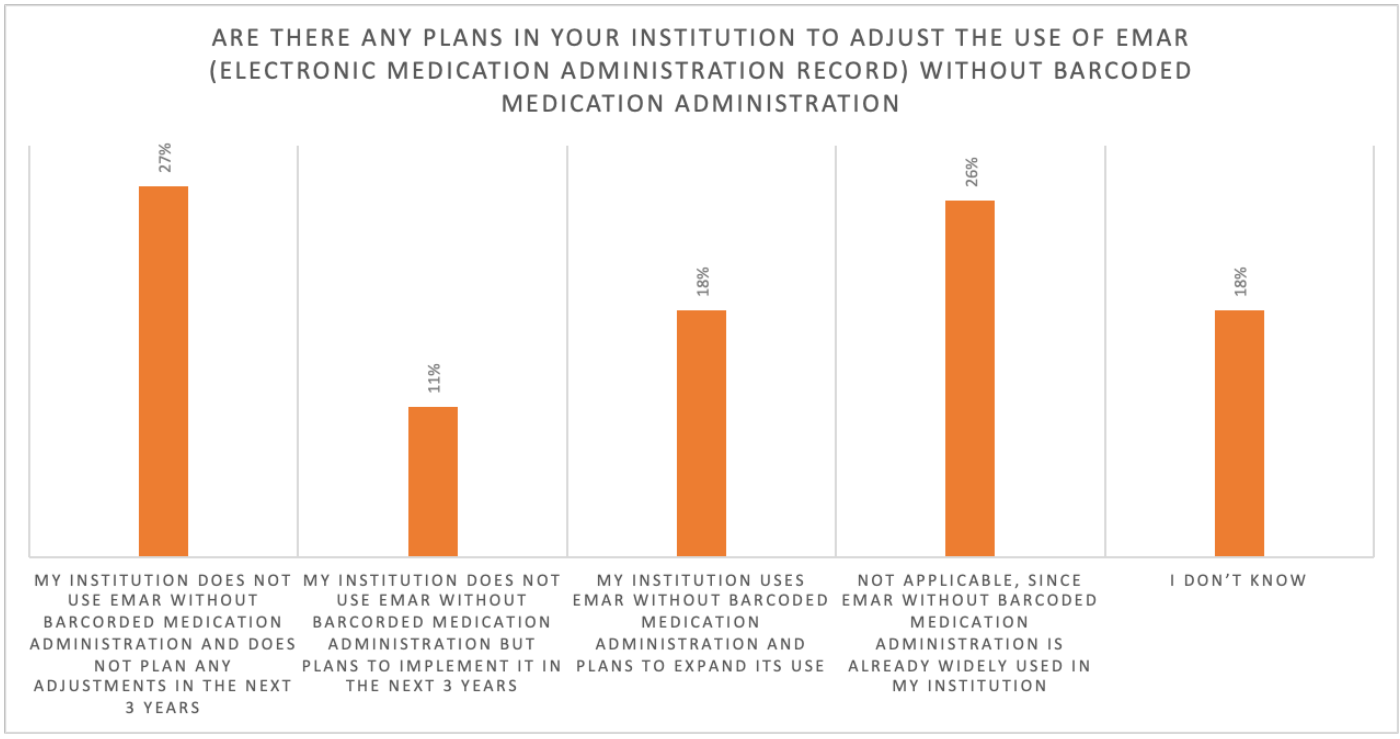

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Figure 20: Percentage (n=357) of respondents to the question 16 "Are there any plans to adjust the use the use of eMAR (electronic medication administration record) without…"

Solid and liquid formulations

Survey respondents were asked how oral solid formulations arrive from the manufacturer. They were asked to estimate a percentage for each one of the following categories: original packs/boxes, manufacturer supplied unit dose, bulk or bulk ware and repurposed by a third-party to a unit-dose blister. The below is a breakdown of the percentages provided by respondents.

Original packs/boxes	**Percentage of respondents (n=302) that included this percentage**
Less than 25%	13% (n=38/302)
25-50%	17% (=51/302)
50-75%	18% (n=53/302)
75-100%	62% (n=187/302)
Manufacturer supplied unit dose	
Less than 25%	36% (n=109/302)
25-50%	16% (n=47/302)
50-75%	15% (n=44/302)
75-100 %	7% (n=20/302)
Bulk or bulk ware	
Less than 25%	56% (n=169/302)
25-50%	3% (n=9/302)
50-75%	1% (n=3/302)
75-100%	1% (n=3/302
Repurposed to a third-party blaster	
Less than 25%	56% (n=169/302)
25-50%	3% (n=3/302)
50-75%	1% (n=3/302)
75-100%	1% (n=3/302

The respondents were also asked how oral solid are dispensed out of the central pharmacy. The below is a breakdown of the answers given:

Original packs/boxes	**Percentage of respondents (n=302) that included this percentage**
Less than 25%	29% (n=88/302)
25-50%	9% (n=27/302)
50-75%	7% (n=21/302)
75-100%	46% (n=140/302)
Manufacturer supplied unit dose	

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Less than 25 %	34% (n=103/302)
25-50%	15% (n=45/302)
50-75 %%	6% (n=18/302)
75-100	8% (n=23/302)

The respondents were also asked how medications are repurposed into unit-dose.

Repurposed into unit dose manually (example. scissors, Ziplock bag, manual label)	**Percentage of respondents (n=302) that included this percentage**
Less than 25 %	20% (n=103/302)
25-50 %	9% (n=45/302)
50-75 %	2% (n=18/302)
75-100 %	3% (n=23/302)
Repurposed into unit dose automated pouch from deblistered or bulk supply	
Less than 25 %	48% (n=144/302)
25-50%	4% (n=12/302)
50-75 %	3% (n=9/302)
75-100 %	4% (n=11/302)
Repurposed into unit dose overwrap (no deblistering)	
Less than 25 %	45% (n=135/302)
25-50 %	9% (n=26/302)
50-75 %	4% (n=12/302
75-100 %	3% (n=10/302

Automated Dispensing Cabinets (ADCs)

When asked how many automated dispensing cabinets (ADCs) are approximately deployed in their institutions, 67% (n=202/302) of the survey respondents stated that their institutions don't have ADCs. 33% (n=101/302) have ADCs.

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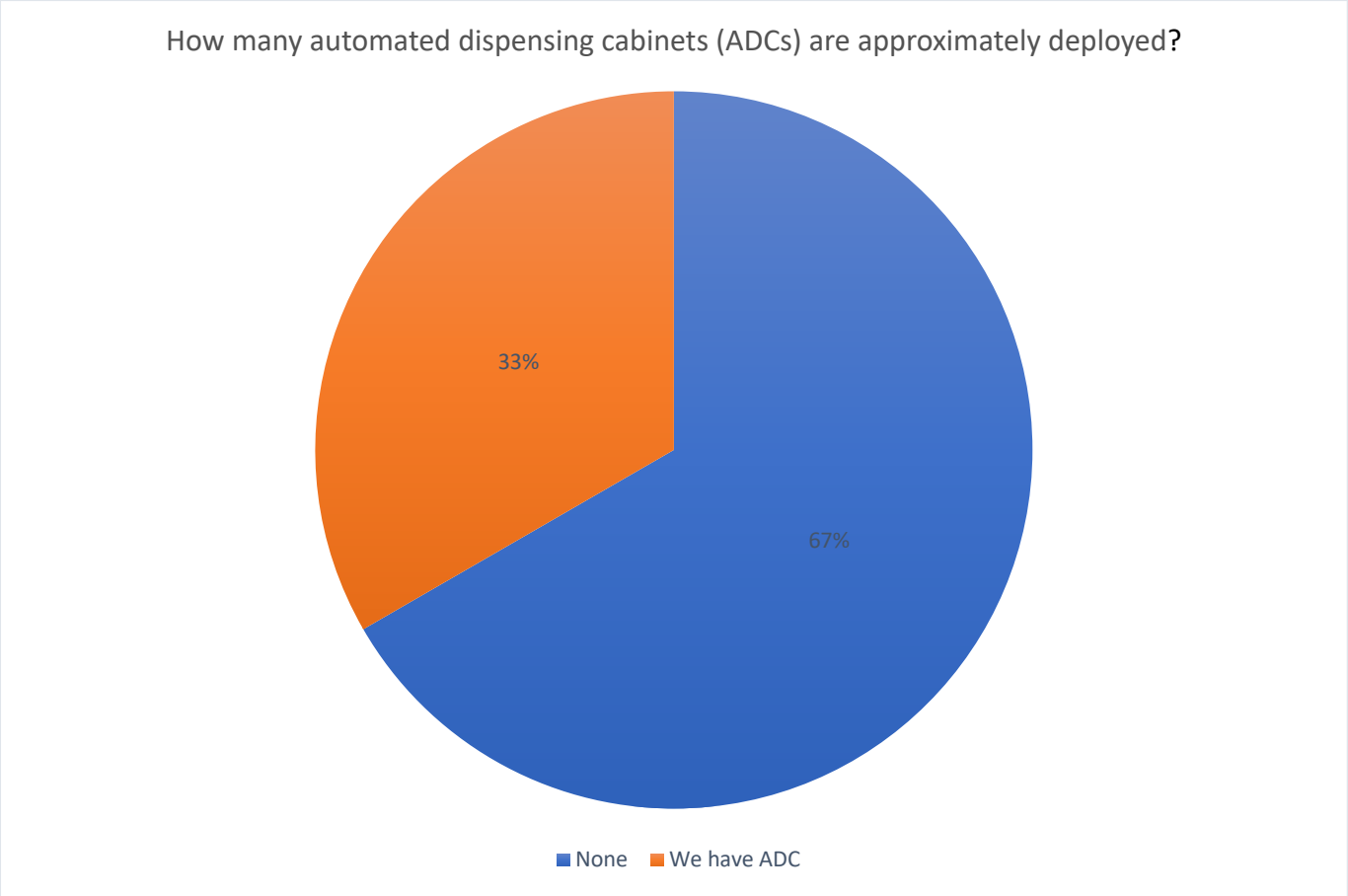

Figure 21: Percentage of respondents (n=302) that answered to question 20 "How many automated dispensed cabinets…"

This question also asked respondents (n=101) that have ADCs within their hospitals to include the approximative number of ADCs. 34% (n=34/101) had between 2 and 5 ADCs while 23% (n=23/101) had between 5 and 15 ADCs. 14% (n=14/101) only had one ADCs and 34% (n=34/101) had more than 15 ADCs.

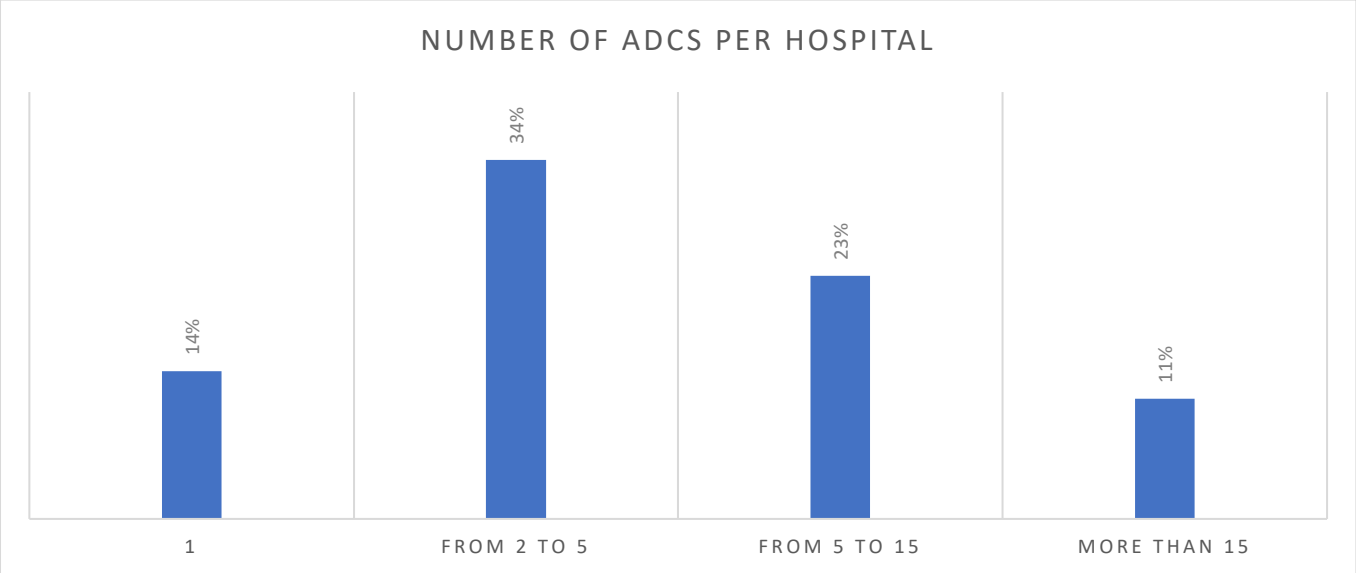

Figure 22: Break down of the Number of ADCs included by respondents (n=101)

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Survey respondents that answered that they have ADCs within their hospitals were asked a follow up question to further investigate the deployment of these cabinets within their hospitals. When asked if the automated dispensing cabinets (ADCs) are used with secured assisted picking, 63% (n=63/100) answered "yes" while 32% (n=32/100) answered "no".

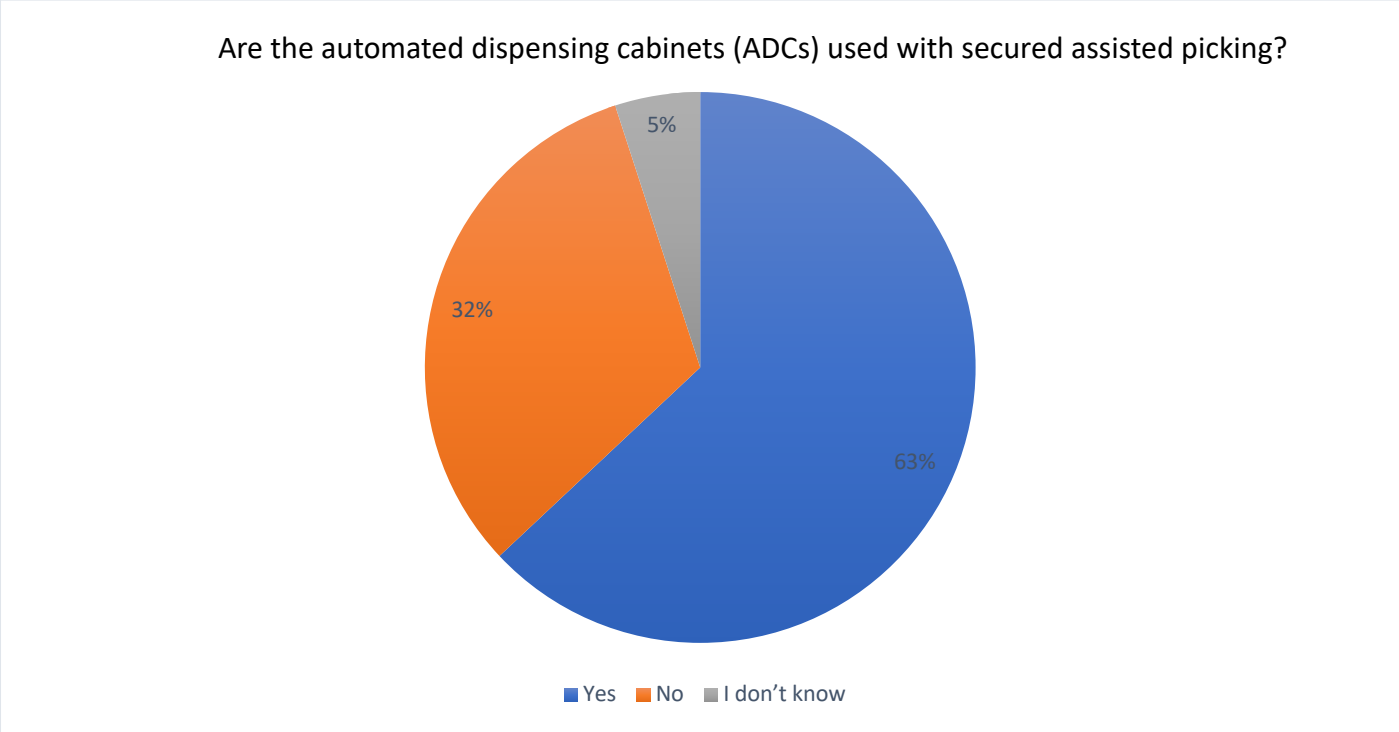

Figure 23: Percentage of respondents (n=100) that answered to question 22 "Are the automated dispensing cabinets (ADCS) used with"

The SIG also asked the same respondents how these ADCs are used within their institutions. 64% (n=64/100) used for most medicines (excluding IV bags). 38% (n=38/100) of the ADCs were also used for controlled substances ,37% (n=37/100 used outside of the pharmacy hours and 37% (n=37/100) used for limited ward stock.

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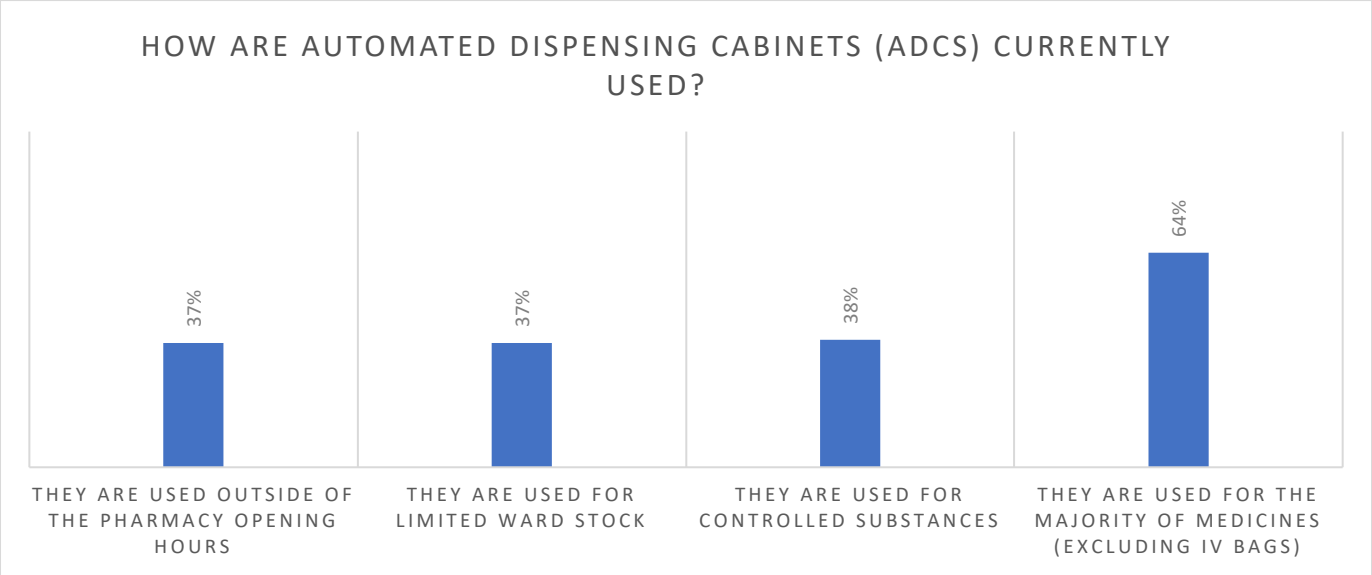

Figure 24: Percentage of respondents (n=100) that answered to the question 23 "How are automated dispensing cabinets (ADCs) "(tick all that apply questions)

Central Pharmacy Automation Systems (NON-IV)

For this section, the SIG wanted to investigate for which type of patients each one of the types of Automation are used within their institutions.

Definitions

Multi-functional central pharmacy unit dose robots – *a highly automated pouch and overwrap robot that may singulate & cut blisterpacks (if overwrap solution), handle non-oral solids, create bar-codes, handle returns, automatically cluster medications by patient, and place into transport devise such as bin or bag.*

Stand-alone high speed unit dose packagers *– repurposes orals solids into unit dose pouches as single dose or multi-dose. Can also be used for repurposing into a non-patient specific single unit dose pouch. Can be used either patient specific or non-patient specific.*

Stand-alone unit dose over wrapping packagers (no de-blistering) *– repurposes orals solids into patient specific or non-patient specific unit dose via overwrap or other method not requiring deblistering. Can be used either patient specific or non-patient specific.*

11% (n=28/265) of the hospitals use multi-functional central pharmacy unit dose robots for long term care patients while 12% (n=32/265) used stand-alone high speed unit dose packagers. In addition, 12%

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(n=32/265) use stand-alone unite dose wrapping. For critical care patients, 2% (6/265) of the hospitals used multi-functional central pharmacy unit dose robots, 6% (n=17/265) use stand-alone high speed unit dose packagers. When asked about "other patients", 7% (n=18/265) used multi-functional central pharmacy unit dose robots, and 9% (23/265) used stand-alone unite dose wrapping and 9% (n=23/265) also use stand-alone unite dose wrapping.

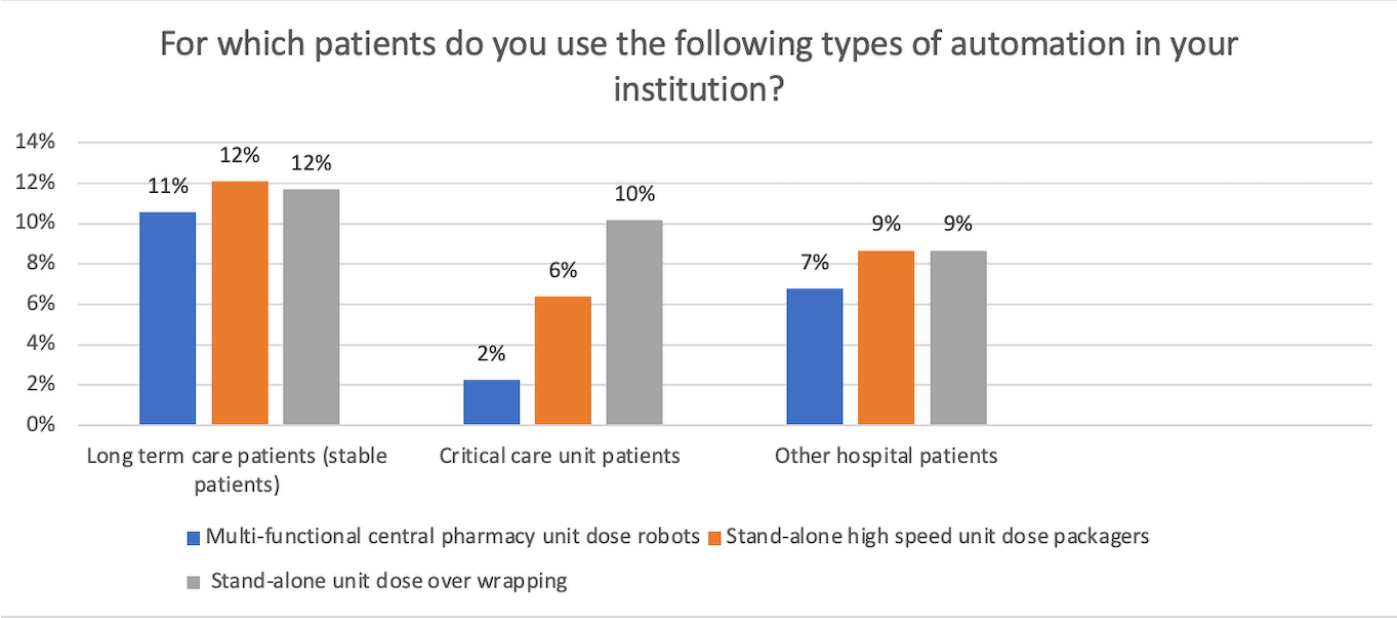

Figure 25: Percentage of respondents (n=265) that answered to question 24" For which patients do you use the following types of automation in…" (tick all that apply question)

Survey respondents were asked how the following types of automation dispense to patient in their institutions. The below were some helpful definitions provided to the survey participants:

Definitions:

Robotic original pack dispensers *– automated loading and dispensing within retail or hospital central pharmacies.*

Semi-automated conveyor *– Conveyor belt(s) in the pharmacy that is linked to an automatic sorter that visually identifies packs and then sorts them into the appropriate transport box.*

Carousels *– vertical and horizontal storage and retrieval systems.*

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For the drugs dispensed to inpatients (patient specific), 16% (n=43/265) used carousels storage while 9% (n= 24/265) used robotic original pack dispensers and 3% use (n=9/265) use semi-automated conveyors. For the dispense to inpatients (ward stock replacement) the two dispensing systems used the most are robotic original pack dispensers with 16%(n=42/265) and carousel storage with 15% (n=39/265). The answers showed that the countries that (in the Survey) use more carousel storage are Spain and Portugal.

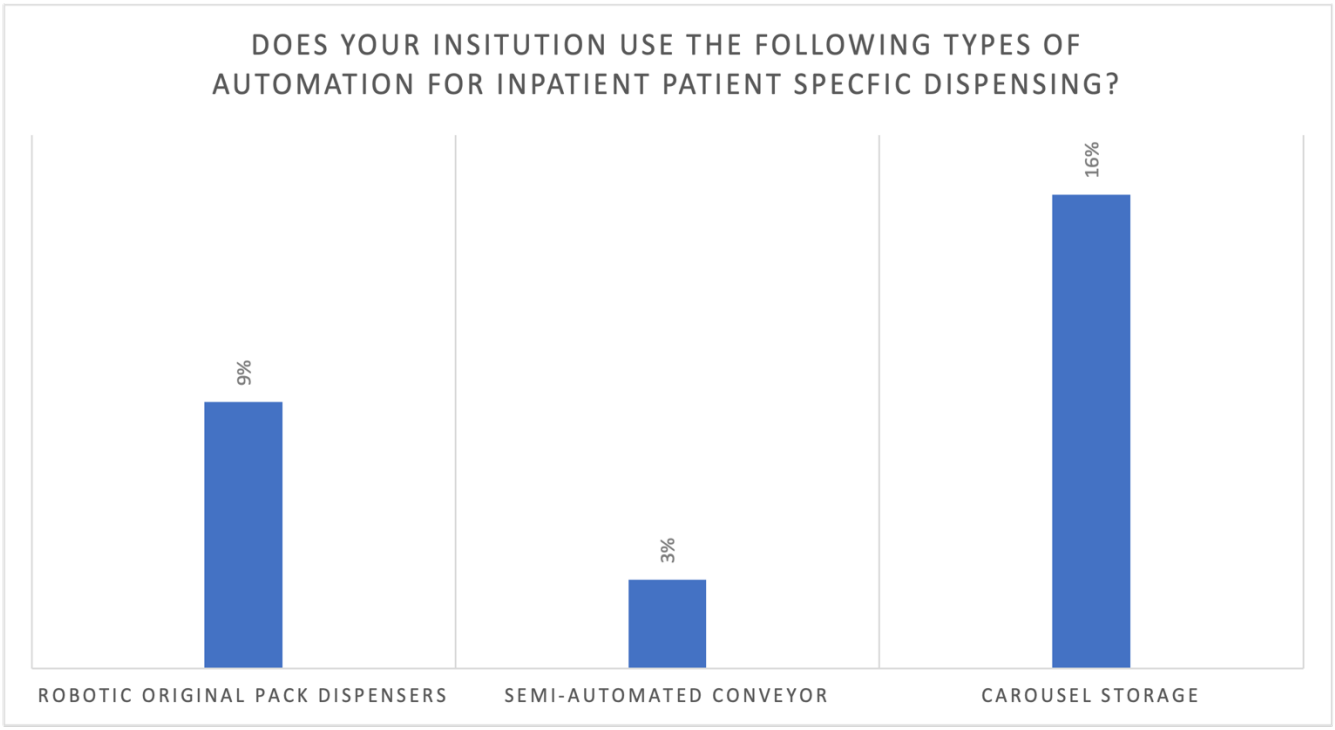

Figure 26: *Percentage of respondents (n=265) that answered to question 25" How do the following types of automation dispense to patients…" (tick all that apply)*

When asked about the automation system that dispensed to other central automation, all the answers given for the three dispensing systems were lower than 9%. For the dispense to outpatients or discharged patients 11% (n=29/264) use robotic original pack dispensers.

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Survey participants where then asked to provide more details on the type of automaton currently used within their hospitals.

Definitions:

Multi-dose package *– Multiple different medications repurposed into a single package either patient specific or non-patient specific.*

Single-dose package *– Single medications repurposed into a single package either patient specific or non-patient specific.*

For single dose patient specific, 6% (n=15/264) use multifunctional central pharmacy unit dose robots, 8% (n=21/264) use stand-alone high speed unit dose packagers and 9% (n=23/264) use stand-alone unit dose over wrapping.

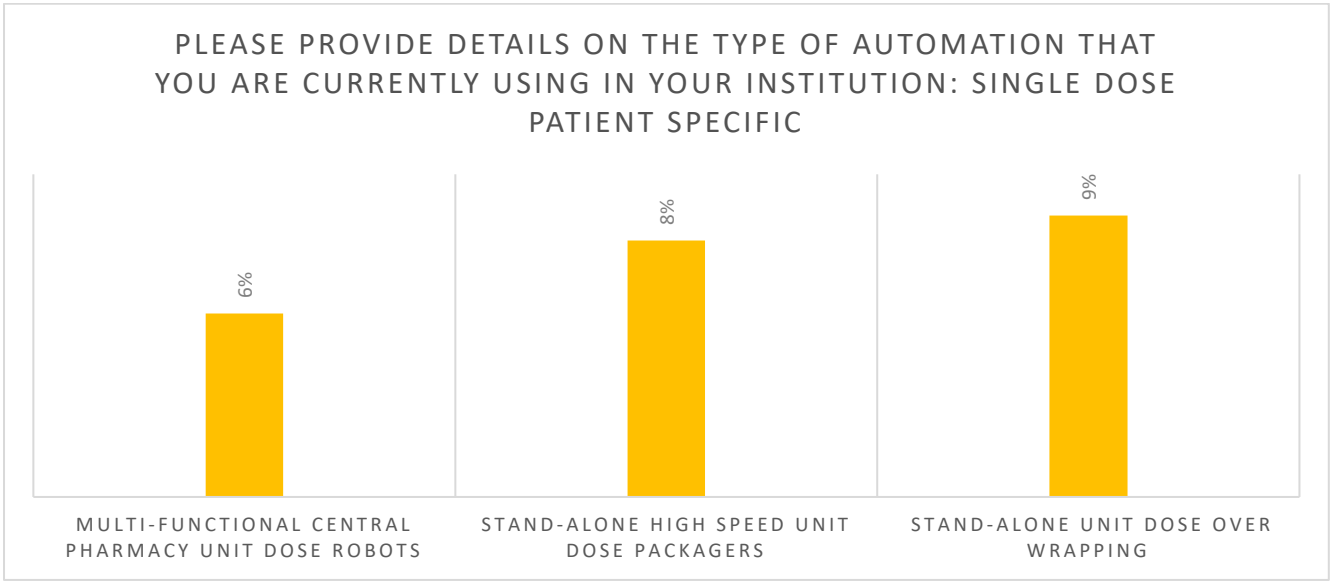

Figure 27: Percentage of respondents (n=265) that answered to question 26" Please provide details on the type of automation that you are currently using"

The same results were given for multidose patient specific.

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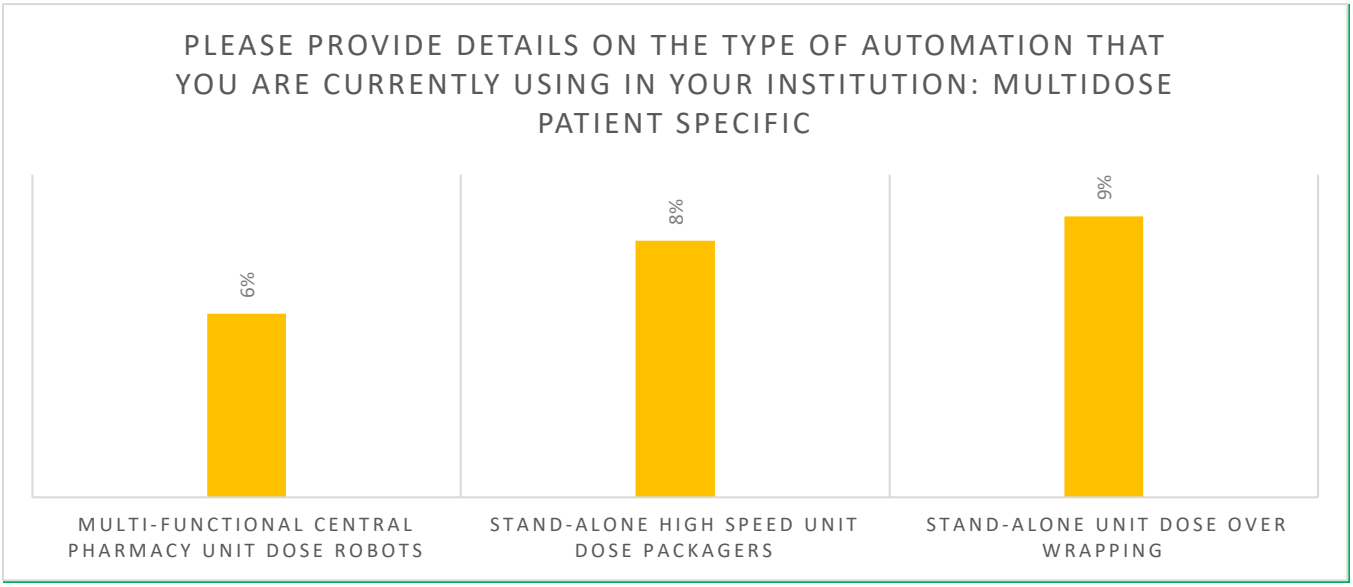
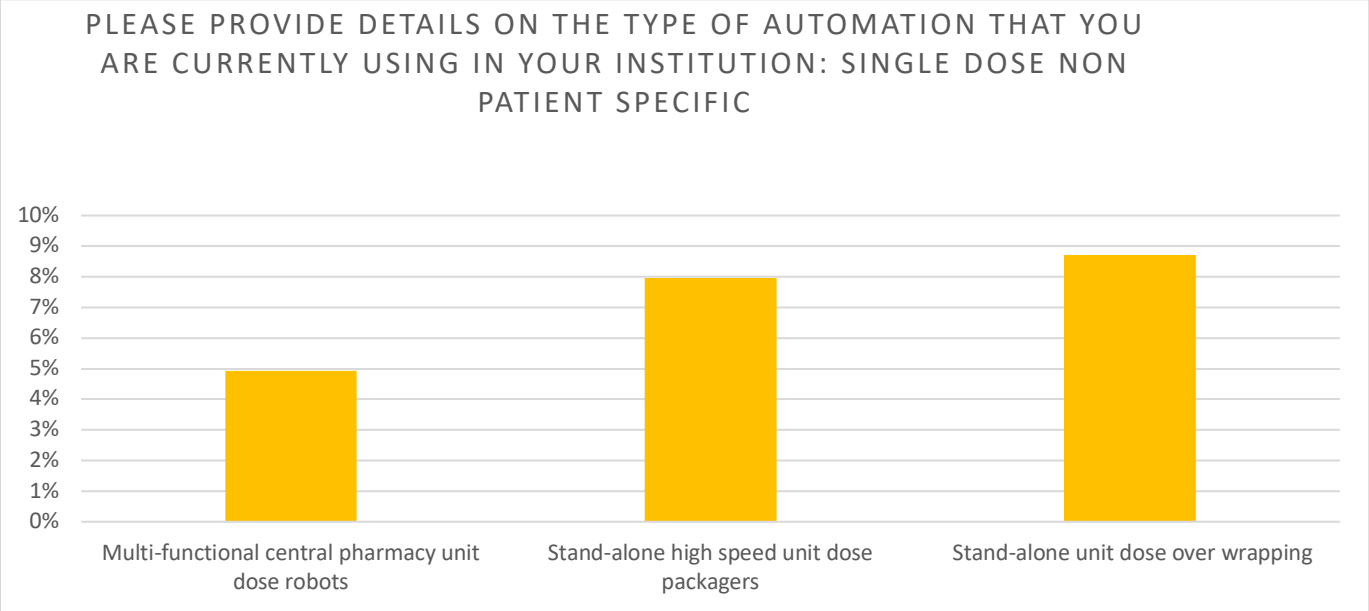


Figure 28: Percentage of respondents (n=265) that answered to question 26 "Please provide details on the type of automation that you are currently using"

For non-patient specific, similar results were given for the single dose packages.



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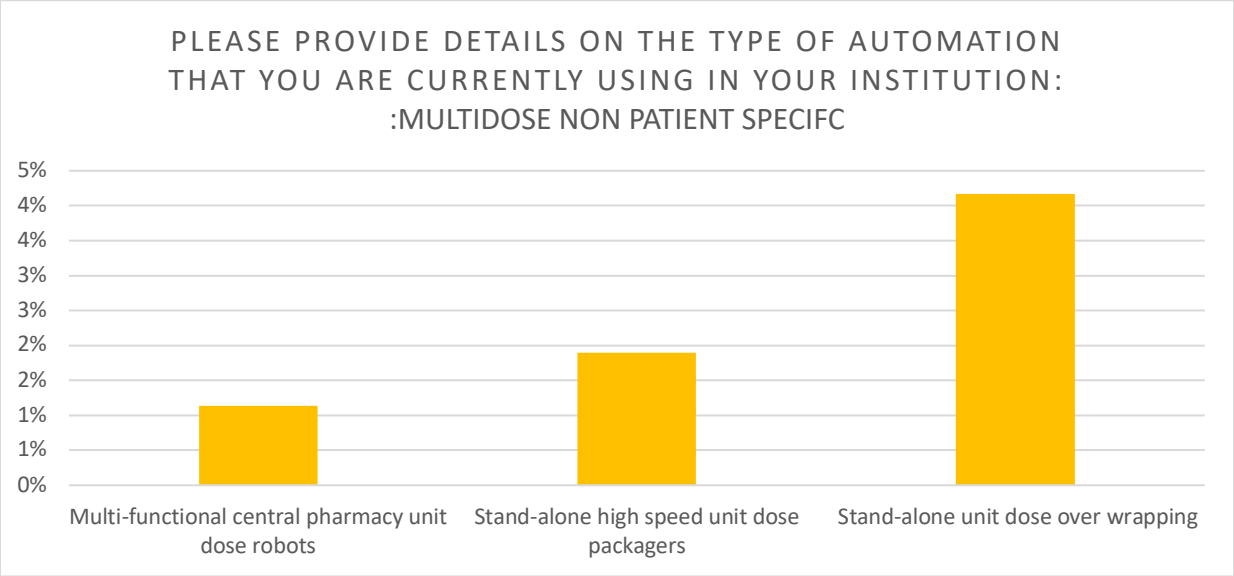
But fewer positive answers were given for multidose non-patient specific.



Survey respondents were asked to convey to the SIG their plans to use automation in the future. 42% (n=107/264) of the Survey respondents don't use and have no plans to use multi-functional central pharmacy unit dose robots it in the future, but a 19% (n=49/264) plan to set aside a budget to acquire it. Similar numbers were given to the central pharmacy stand-alone high speed unit dose packagers, where 42% (n=111/264) don't use and have no plans to it and in this case only 10% (n=26/264) is planning to set a budged aside to acquire it.

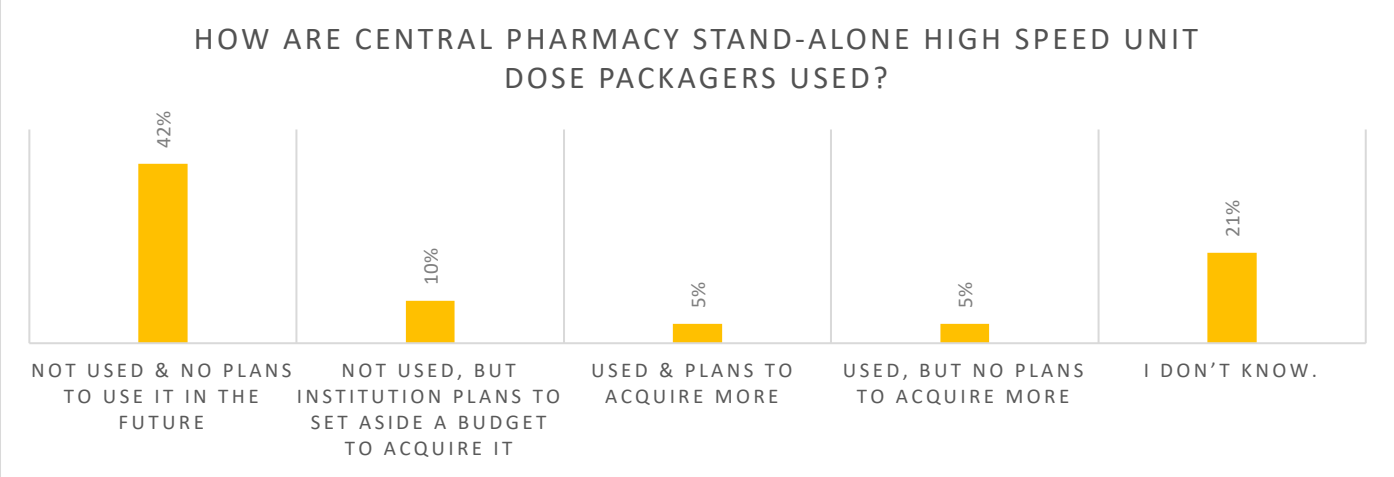


Figure 29: Percentage of respondents (n=264) that answered to question 27 "How does your institution plan to use automation…" (tick all that apply)

42% (n=110/264) don't use stand-alone unit over wrapping packagers and don't plan to use it in the future, but 9% (n=25/264) plan to set aside a budget for it. 6% of survey respondents (n=16/264) use it but have no plans to acquire more while 5% (n=12/265) use it and have plans to acquire more. 23% (n=62/264) are not aware about the use of this automation system within their institutions.

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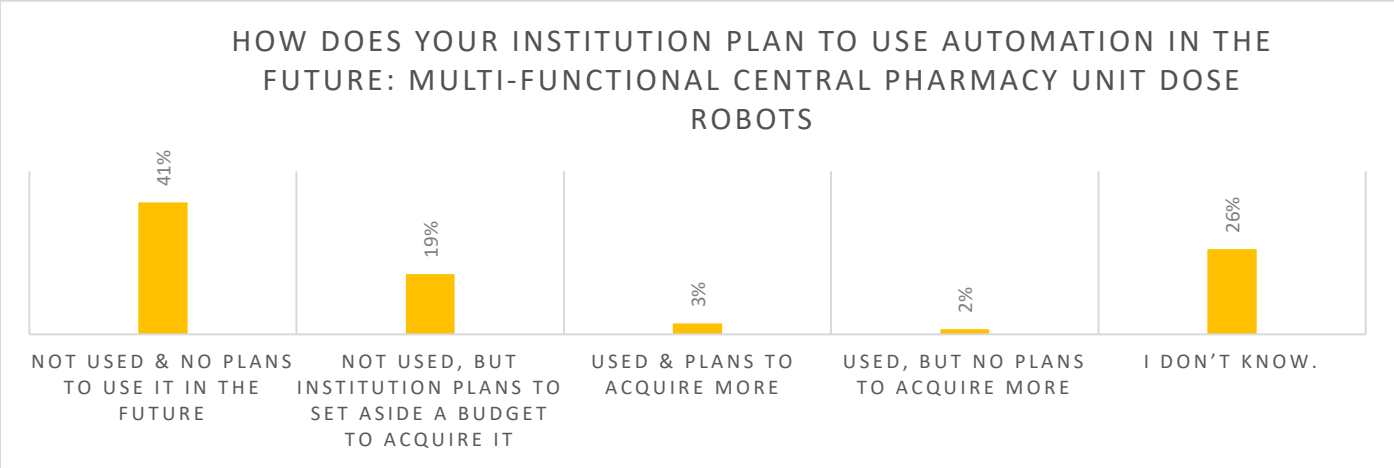

Figure 30: Percentage of respondents (n=264) that answered to question 27 "How does your institution plan to use automation…" (tick all that apply)

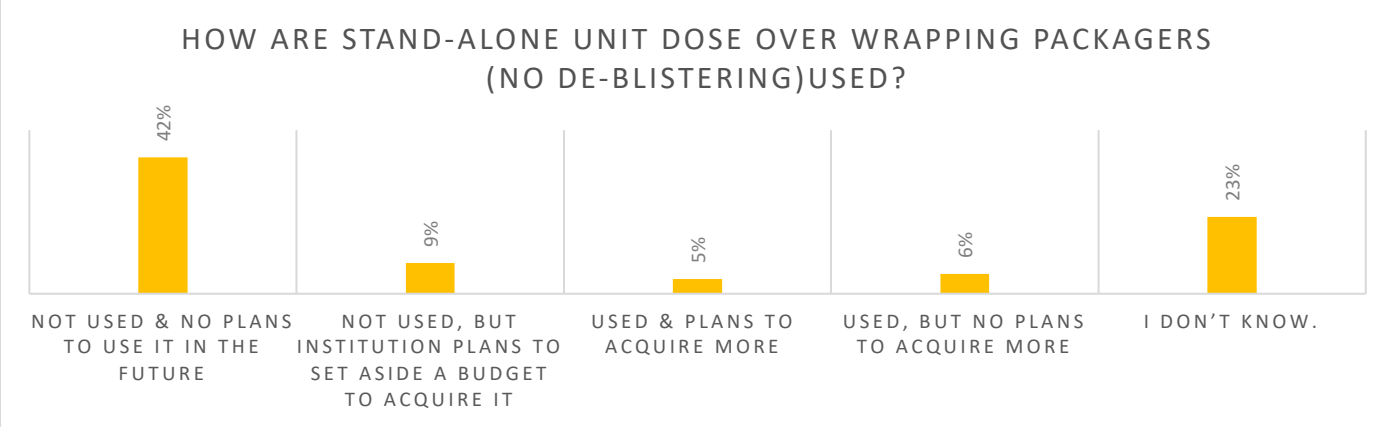

Figure 31: Percentage of respondents (n=264) that answered to question 27 "How does your institution plan to use automation…" (tick all that apply)

The automation system that stood out as the one with a larger percentage of respondents planning to set aside a budget to acquire it were robotic original pack dispensers with a 29% (n=77/264).

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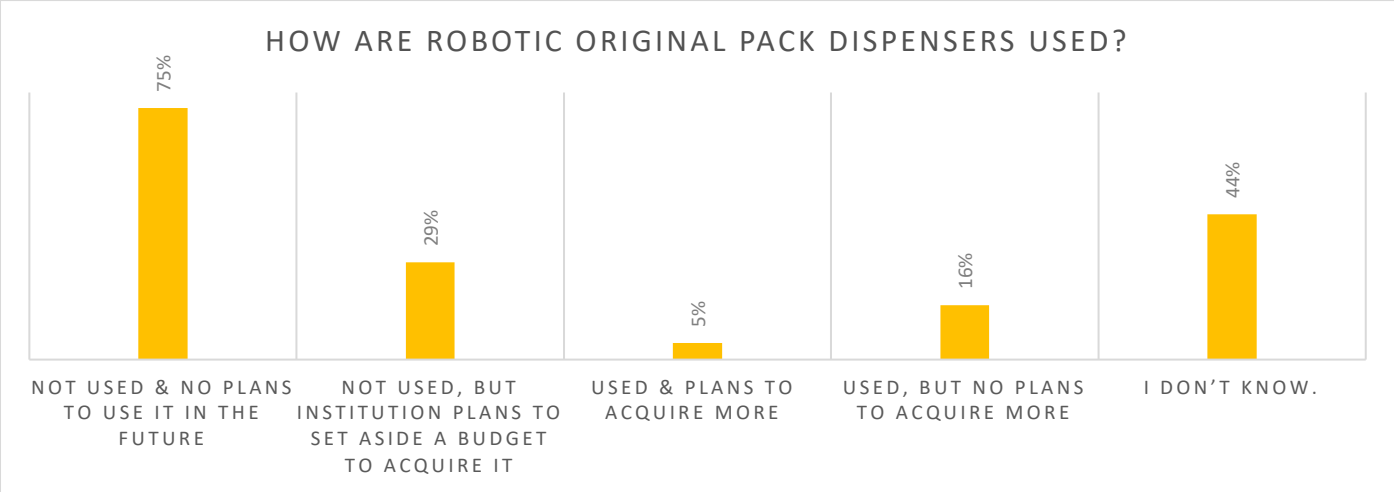

Figure 32: Percentage of respondents (n=264) that answered to question 27 "How does your institution plan to use automation…" (tick all that apply)

The answers for the above graph add up to more than 100 percent, this is because the answers given for "Robotic retrieval solutions" and "Robotic original pack dispensers" where merged. The original Survey had both systems, but the SIG merged both as their meaning is the same.

44% (n=115/264) don't use semi-automated conveyors and don't plan to use it in the future while 9 (n=23/264) plan to set aside a budget for it.

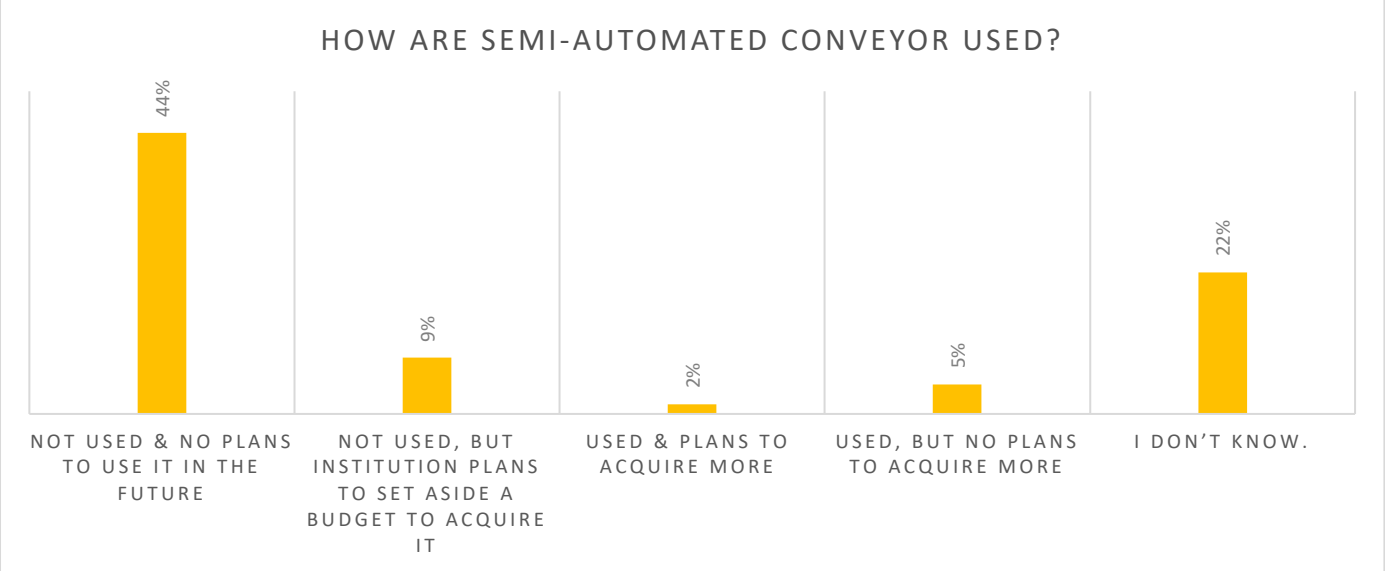

Figure 33: Percentage of respondents (n=264) that answered to question 27 "How does your institution plan to use automation…" (tick all that apply)

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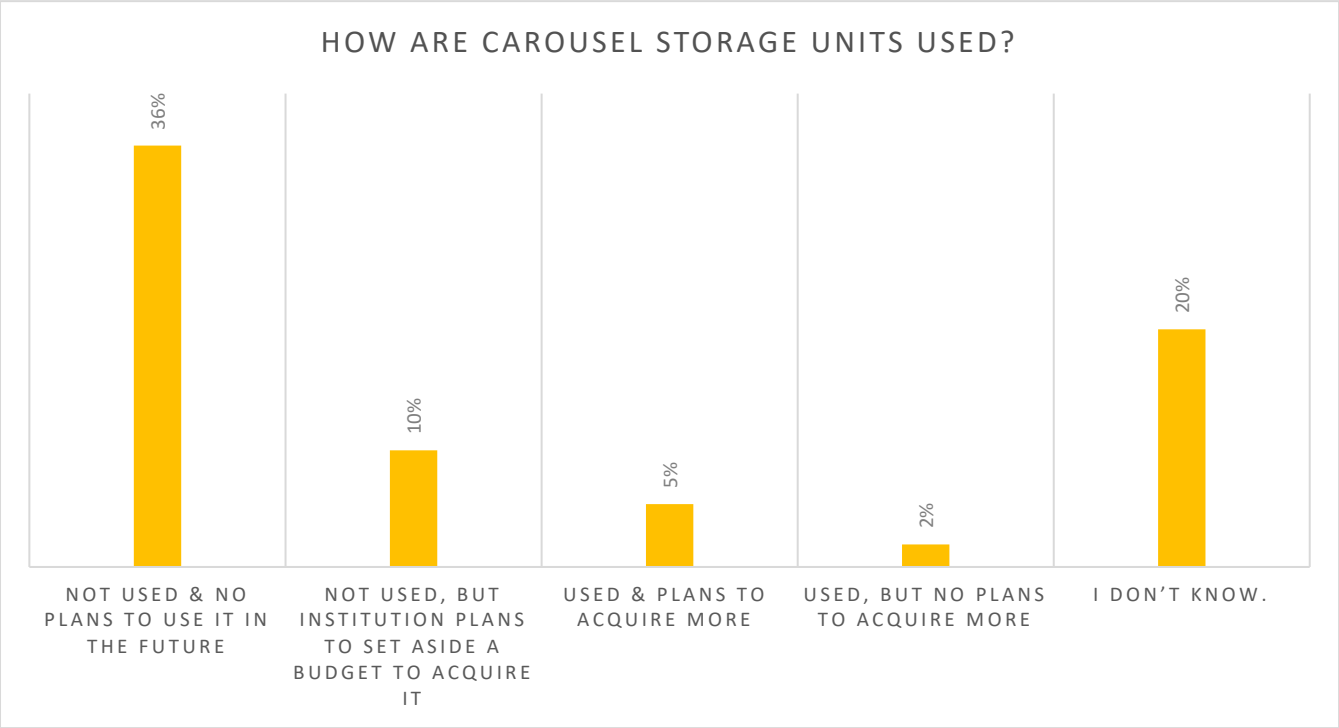

Figure 34: Percentage of respondents (n=264) that answered to question 27 "How does your institution plan to use automation…" (tick all that apply)

IV Automation

Definitions:

Survey participants were asked then how IV Automation is used within their institutions.

IV workflow management technology – Gravimetric and/or volumetric IV compounding assisting hardware and software solution set up within a laminar flow hood.

Fully automated IV compounding systems – Automatically prepares IV syringes and bags from liquid IV or powder vials.

76% (n=200/264) of the respondents answered that they don't have any and 17% (n=45/264) answered that that they use IV workflow management technology. 4% (n=10/264) use fully automated IV compounding systems (for non-chemo products) and only 3% (n=8/264) use fully automated IV compounding systems (for chemo products).

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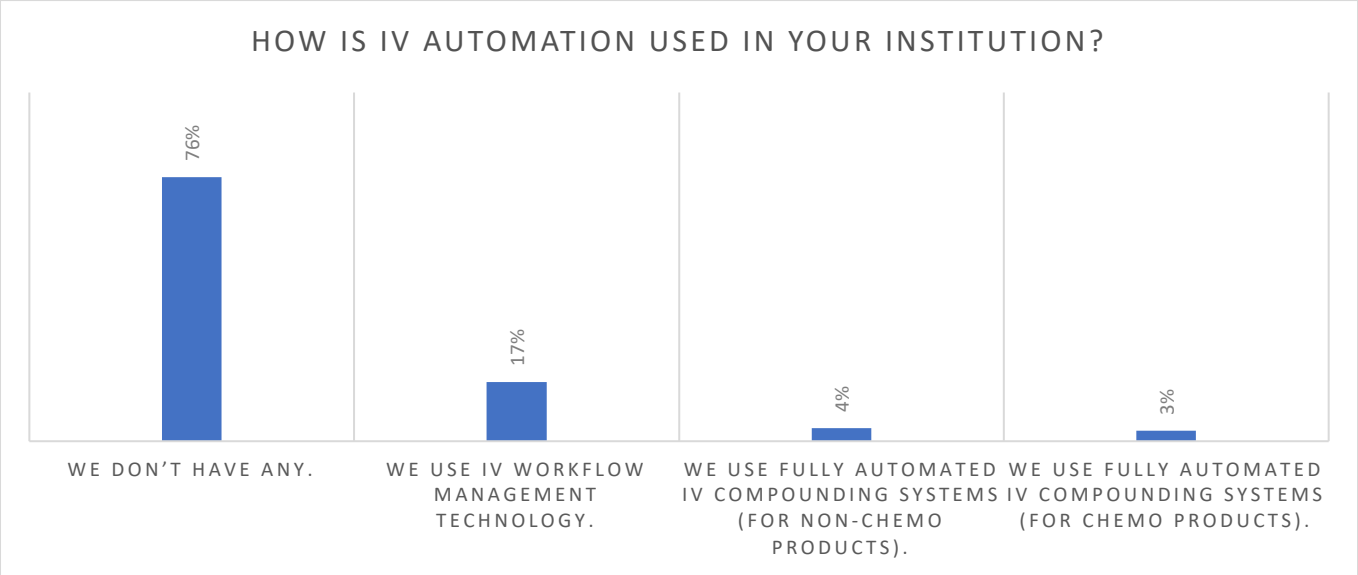

Figure 35: Percentage of respondents (n=264) that answered to question 28 "How is Automation used in your…"

As for the previous questions, survey respondents were also asked on the plans to use in the future the different IV automation systems. 19% (n=50/264) don't use IV workflow management technology but they plan to set aside a budget in the future to acquire it. For fully automated IV compounding systems for non-chemo products only 13% (n=33/264) plan to set aside a budget to acquire it.

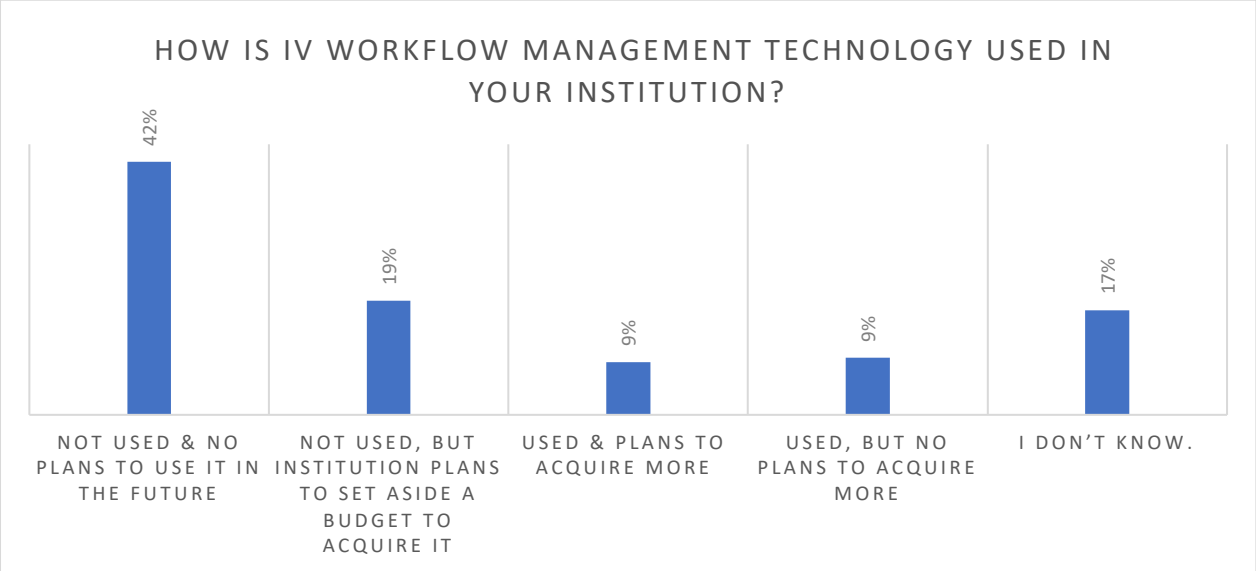

Figure 36: Percentage of respondents (n=264) that answered to question 28 "How is Automation used in your…"

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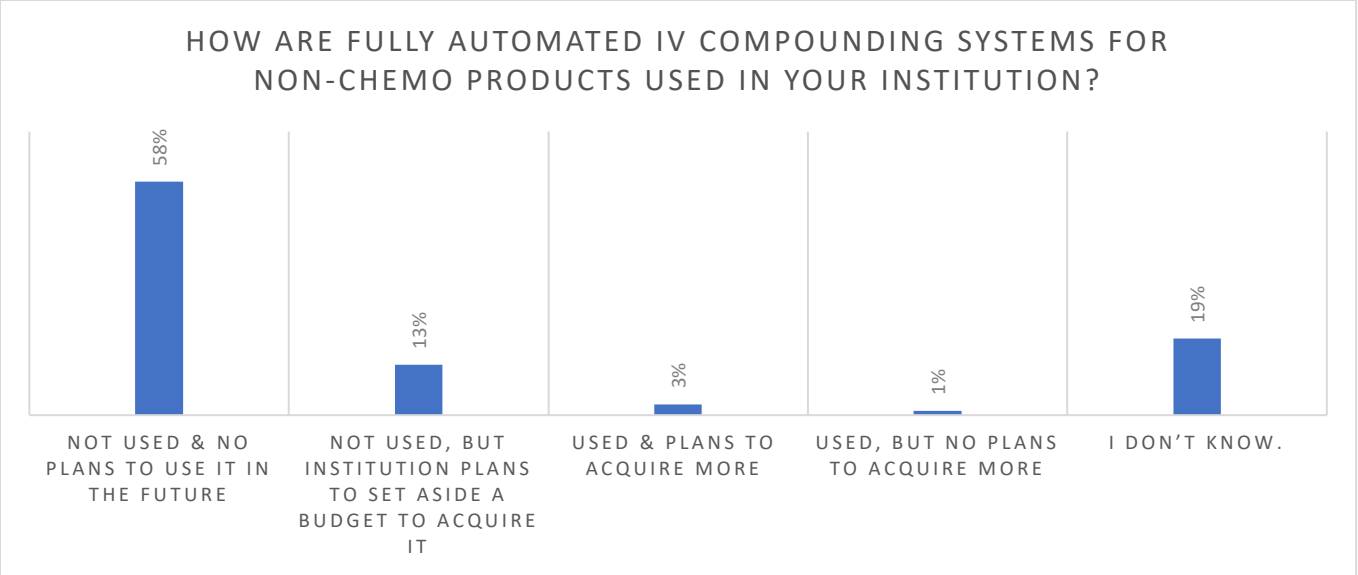

Figure 37: Percentage of respondents (n=264) that answered to question 28 "How is Automation used in your…"

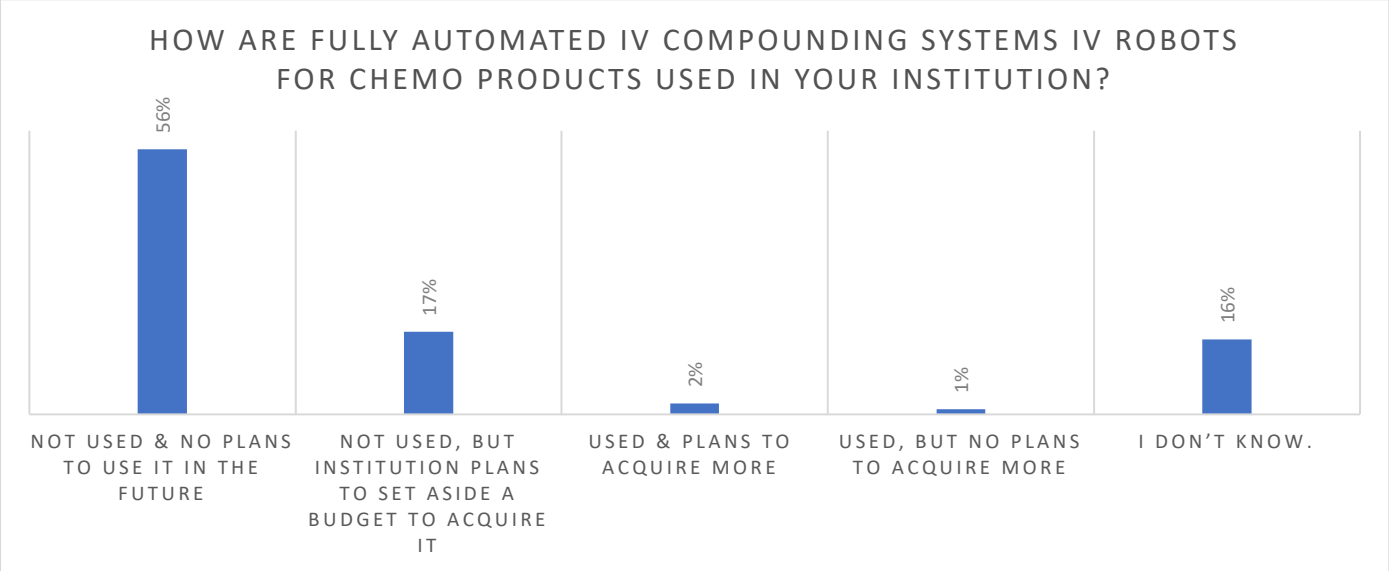

Figure 38: Percentage of respondents (n=264) that answered to question 28 "How is Automation used in your…"

Conclusions

The SIG conducted this Survey to analyse and assess the status of automated medication management in Europe and to investigate the benefits of automating medication management, particularly around the medication preparation/compounding/dispensing process, and how technology best meets the needs of different hospital pharmacy workflows. Different conclusions can be extracted from the results of the Survey.

The work of this Special Interest Group (SIG) was financially supported by Omnicell.

First, it is worth noting that the number of respondents was not as large as expected, especially given the fact that only half of the respondents who started the Survey went until the end of the Survey. The SIG has decided to review the questions and the Survey to assess if the content could be shortened to get more responses. The SIG will discuss and decide during the second phase of this project if a shorter Survey should be circulated to EAHP members in the future. A proposal will be made to the EAHP Board in Spring 2024.

The Survey has showed that there is still a lot of work to do in Europe to move towards more automated medicament management systems within the hospitals. The use of electronic medical administration record without barcoding is still not very common, with 69% of the hospitals that participated in this Survey not using it. EAHP and the SIG believes that systematic and EU-wide achievement of electronic prescribing, administration and use of electronic medical records will improve patient safety and help advance the development of automation systems, thus, this is something that should be further investigate in the future, especially because 35% of these hospitals don't have a plan to implement this in the future. In addition, the Survey results show that manual ward stocks are still by far the more used distribution model within European hospitals.

The survey also allows to conclude that most of the hospitals still don't have plans to implement automation systems. Thus, the SIG believes it's important that EAHP and all relevant stakeholders further study the reasons for hospitals not planning to move towards automation (e.g., economic, interoperability…).The systems that are more planned to be implemented in the future are robotic original pack dispensers (29% of the hospitals plan to set aside budget to use it) and multifunctional central pharmacy unit dose robots.

This survey also provided the SIG with a baseline understanding of automation deployment that was useful in defining a European autonomous pharmacy framework, particularly around the automation component of the four component framework. The framework will be published during the next EAHP Congress in March 2024. In addition, the SIG is working on improving the Survey so more analytic information from more countries can be obtained by EAHP.

The work of this Special Interest Group (SIG) was financially supported by Omnicell.

Annex I: SIG membership

Name	Role	Country
Thomas Bäckstrøm	Hospital Pharmacy Director at the Sykehusapotekene Østfold, Kalnes	Norway
Etienne Cousein	Head of pharmacy at the Valenciennes' General Hospital	France
Martin Hug	Prof. Dr. Martin J. Hug, Direktor, UNIVERSITÄTSKLINIKUM FREIBURG Apotheke	Germany
Ľuboš Doršic	Hospital Pharmacy Manager for NNG Bory and Implementation Manager for Svet zdravia a.s.	Slovakia
Don Ferren	Director of Clinical Strategy (International) at Omnicell	United States
Alen Friščić	Head of hospital pharmacy at the Zabok General Hospital	Croatia
András József Gergely	Hospital pharmacists at the Borsod-Abaúj-Zemplén County Hospital and University Teaching Hospital	Hungary
András József Langer	Hospital-clinical pharmacist specialist at the University Pharmacy of Semmelweis University	Hungary
Uli Lösch	Responsible pharmacist for pharmaceutical manufacturing of Spital Pharmacy Universitätsspital, Basel	Switzerland
Mariarita Pirrera	Permanent Executive Pharmacist Discipline: Hospital Pharmacy at the Azienda Usl della Romagna – sede di Forlì	Italy
Emili Vallvé Alcón	Specialist pharmacist in hospital pharmacy at the Vall d'Hebron University Hospital in Barcelona	Spain
Marcin Bochniarz	Szpital Specjalistyczny w Brzozowie Podkarpacki Ośrodek Onkologiczny	Poland

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