



هَيْئَةُ الدَّوَاءِ الْمَصْرِئِيَّة

الإدارة المركزية للرعاية الصيدلانية  
الإدارة العامة للممارسات الدوائية و الصيدلانية

## EDA Pharmaceutical Care Initiative



**Excellent Pharmacy Practice  
100 Projects  
2021-2022**

## Preface

The Egyptian Drug Authority (EDA), is a public service authority, with a legal personality, affiliated with the Egyptian Prime Minister. EDA exclusively exercises all regulatory, executive, and supervisory, to ensure the quality, efficacy, and safety of medical products and devices stipulated under the provisions of EDA establishing law no. 151 for the year 2019.

This documentary book aims to document and highlight the efforts made during the Pharmaceutical Care Initiative – Excellent Pharmacy Practice (EDA initiative - 100 Projects) 2021 – 2022 by the General Administration of Drug Utilization and Pharmacy Practice, GA of DU&PP (the initiative owner & book copywriter) along with clarifying the implementation methodology of the initiative in addition to illustrating the objectives of provided training programs.

To make light of the initiative's achievements and its positive impact on the provided medical service in different sectors to spread a spirit of enthusiasm, hope and encouragement by emphasizing the work conducted through the Pharmaceutical Care Initiative – Excellent Pharmacy Practice (EDA initiative - 100 Projects).

To present real stories of successful improvement projects that may inspire and lead others to start their own success story, which will emphatically affect the healthcare service provided to the community under the supervision of EDA hand in hand with their head of sectors and the hospital administrators.

## Participating Affiliations' Logos:



## Acknowledgment

We are proud to recognize with honor all those who contributed to implementing the Pharmaceutical Care Initiative – Excellent Pharmacy Practice (EDA initiative - 100 Projects) 2021 – 2022 to reach this wonderful, appropriate and outstanding level, it starts from sending thanks to the supporting leaders in Egyptian Drug Authority and to the executive - development team at General Administration of Drug Utilization And Pharmacy Practice (GA of DU & PP), as well as sending credits to the participants including the instructors and the jury members from university professors in addition to pharmacy experts and practitioners with scientific and professional experience.

First and foremost, we send our warmest thanks to the visionary leaders of the Egyptian Drug Authority; Prof. Tamer Essam, Chairman of the Egyptian Drug Authority, and Prof. Aiman El Khatib, Deputy Chairman of the Egyptian Drug Authority for their support and for adopting the innovations and new ideas.

We would also like to extend our sincere gratitude to Dr. Rasha Ziada, EDA Assistant Chairman for Technical Development and Capability Building for her extremely valuable support, great opinions, and motivation.

With immense gratitude, we acknowledge the support and help of Dr. Shereen Abdelgawad, Head of the Central Administration of Pharmaceutical Care for guiding this initiative through the valuable commendations.

The initiative steps were planned and implemented with high innovation, professionalism, and enthusiasm under the leadership of Dr. Ghada Ali Younis “Initiative Founder”, and Head of the General Administration of Drug Utilization and Pharmacy Practice. With high team spirit and excellence from the executive/development team members, who are proud to devote their efforts to carrying out the initiative responsibilities and sharing experiences with the Egyptian pharmacists. The executive team members (in alphabetic order): Dr. Abdulrahman Amin, Dr. Abeer Elbehairy, Dr. Eman Zakaria, Dr. Hebatullah Abdul-Aziz, Dr. Kholoud Al- Naggar, Dr. Lamis Diao, Dr. Lobna Samy, Dr. Medhat Abdelhakam, Dr. Mohamed Eldesokey, Dr. Mona Abo Elsoud, Dr. Nesma Atef, and Dr. Shimaa Nasr Elden.

With great appreciation, we pay tributes to all participants including the instructors and the jury members from the university professors in addition to pharmacy experts, and practitioners with scientific and professional experience as that would not have been possible without their valuable inputs, comments, and special instructions, which gave the pharmacists a perfect blend between academia, guidelines, and standard practice.

These great efforts would have never reached without the cooperation and support of internal hospitals promoters - collaborators - moderators from different authorities and ministries; “Supreme Council of University Hospitals, Secretariat of Specialized Medical Centers, General Authority of Health Care, General Organization for Teaching Hospitals and Institutes, General Authority for Health Insurance, Health Affairs Directorates in the governorates” in addition to the pharmacists in private health institutions and community pharmacies, finally special thanks goes to EVA Pharma Team, Continuing Professional Development (CPD) and IT team at EDA.

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## Top Manager

**Dr. Shereen Abdel Gawad**

*Head of Central Administration of Pharmaceutical Care*

## EDA Initiative- 100 Projects Executive Team (Alphabetically)

1	<b>Dr. Ghada Ali Younis</b> <i>General Manager of the General Administration of Pharmacy Practice &amp; Drug Utilization (GA of DU &amp; PP), CA of Pharmaceutical Care.</i>	Executive Director of the initiative, Pharmacy Practice Program Instructor, Member of the Jury, Projects Abstracts Reviewer. EDA Initiative Booklet Reviewer.
2	<b>Dr. Abeer Elbehairy</b> <i>Head of Pharmacy Development Administration, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Rational Antimicrobial Program Director, Pharmacy Practice Program Instructor, Central Coordinator for Antimicrobial and ICU Improvement Projects, Projects Abstracts Reviewer, Platform Management Team.
3	<b>Dr. Hebatullah M. Abdul-Aziz</b> <i>Head of Clinical Pharmacy Practice Administration, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Clinical Pharmacy ICU - Adult Program Director, ICU and Pharmacy Practice Program Instructor, Central Coordinator for Antimicrobial and ICU Improvement Projects, Projects Abstracts Reviewer, Platform Management Team, EDA Initiative Booklet Reviewer.
4	<b>Dr. Eman Zakaria</b> <i>Head of National Drug List Unit, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Quality Improvement Program Director, Quality Program Instructor.
5	<b>Dr. Abdulrahman Mohamed Amin</b> <i>Head of the NOHARMe Unit, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Initiative Data Management Team Leader, Platform Management Team, Rational Antimicrobial Program Instructor.
6	<b>Dr. Lobna Samy Younes</b> <i>Head of Pharmaceutical Care Initiatives Unit, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Patient Counseling Program Director, Rational Antimicrobial and Patient Counseling Program Instructor, Central Coordinator for Antimicrobial and ICU Improvement Projects, Projects Abstracts Reviewer, EDA Initiative Booklet Editor.
7	<b>Dr. Mona Abo Elsoud</b> <i>Head of Drug Information Center, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Oncology Pharmacy Practice Program Instructor, Central Coordinator for Oncology Improvement Projects, Projects Abstracts Reviewer.

8	<b>Dr. Kholoud Ahmed Al- Naggar</b> <i>Head of Drug Awareness Administration, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Pharmacy Practice Program Director, Patient Counseling Program Instructor, Oncology Pharmacy Practice Program Instructor, Central Coordinator for Oncology Improvement Projects, EDA Initiative Booklet Designer.
9	<b>Dr. Shimaa Nasr Eldien</b> <i>Head of Rational Drug Use Unit, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Rational Antimicrobial, ICU and Patient Counseling Program Instructor, Central Coordinator for Antimicrobial and ICU Improvement Projects, Projects Abstracts Reviewer.
10	<b>Dr. Nesma Atef Sarhan</b> <i>Head of Egyptian Drug Formulary Unit, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Central Coordinator for Antimicrobial and ICU Improvement Projects, Projects Abstracts Reviewer, Initiative Management Team.
11	<b>Dr. Medhat Abdelhakam Mohamed</b> <i>Head of Oncology Pharmacy Practice Unit, DU &amp; PP GA, CA of Pharmaceutical Care.</i>	Oncology Pharmacy Practice Program Director, Oncology Pharmacy Practice Program Instructor, Central Coordinator for Oncology Improvement Projects, Projects Abstracts Reviewer, EDA Initiative Booklet Editor.
12	<b>Dr. Lamis Diaa Saeed</b> <i>Member of Pharmacy Practice &amp; Drug Utilization General Administration, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Data Management Team, Initiative Management Team.
13	<b>Dr. Mohamed Elsayed Eldesokey</b> <i>Member of Pharmacy Practice &amp; Drug Utilization General Administration, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Data Management Team, Initiative Management Team.
14	<b>Mr. Tamer Maher</b> <i>Administrative Officer, GA of DU &amp; PP, CA of Pharmaceutical Care.</i>	Communications Coordinator.

## EDA Initiative - 100 Projects Instructors (Alphabetically)

1	<b>Dr. Abdulrahman Mohamed Amin</b> Head of the NOHARMe Unit, <i>DU &amp; PP GA</i> , EDA	2	<b>Dr. Abeer Elbehairy</b> Head of Pharmacy Development Administration, <i>DU &amp; PP GA</i> , EDA
3	<b>Dr. Adi Nuseirat</b> Technical Officer in the Access to Medicines & Technologies Unit, WHO	4	<b>Dr. Amany El-Zeiny</b> Training Department Manager, SMC, MOHP
5	<b>Dr. Amira Helmy</b> Head of Clinical Pharmacy Dep. Sheikh Zayed Hospital	6	<b>Dr. Bassim Zayed</b> AMR/IPC Unit, WHO
7	<b>Dr. Eman Zakaria</b> Head of National Drug list Unit, <i>DU &amp; PP GA</i> , EDA	8	<b>Dr. Ghada Ali Younis</b> Head General Administration of Pharmacy Practice & Drug Utilization, <i>DU &amp; PP GA</i> , EDA
9	<b>Dr. Hagar Elkazaz</b> Clinical Pharmacy Lecturer and Biostatistician, Alex. Ophthalmology Hospital.	10	<b>Dr. Heba Anees</b> Head of Inpatient Clinical Nutrition Services, NCI
11	<b>Dr. Hebatullah M. Abdulaziz</b> Head of Clinical Pharmacy Practice Administration, <i>DU &amp; PP GA</i> , EDA	12	<b>Dr. Hind Ebrahim</b> Inpatient Pharmacy Director, Dar Alfouad Hospital
13	<b>Dr. Islam Anan</b> CEO – Accsight/ Lecturer of Pharmacoeconomics & Pharmacoeconomics	14	<b>Dr. Kholoud Ahmed Al- Naggat</b> Head of Drug Awareness administration, <i>DU &amp; PP GA</i> , EDA
15	<b>Dr. Lobna Samy Younes</b> Head of Pharmaceutical Care Initiatives Unit, <i>DU &amp; PP GA</i> , EDA	16	<b>Dr. Mahmoud Ahmed Mahrous</b> Head Of Clinical Pharmacy Department, Meet Ghamr Oncology Centre, SMC
17	<b>Dr. Medhat Abdelhakam Mohamed</b> Head of Oncology Pharmacy Practice Unit, <i>DU &amp; PP GA</i> , EDA	18	<b>Dr. Mohamed Saber</b> Former Pharmacy Director, Shefa ElOrman, Egypt
19	<b>Dr. Mona Abo Elsoud</b> Head of Drug Information Center, <i>DU &amp; PP GA</i> , EDA	20	<b>Dr. Naglaa Bazan</b> Head of Clinical Pharmacy at Critical Care Medicine Department, Cairo University Hospitals
21	<b>Dr. Nermin Mohi</b> Head of Clinical Pharmacy Department & Head of Outpatient Clinics at Sharq AlMadina Hospital, SMC	22	<b>Prof. Nirmeen Sabry</b> Professor of Clinical Pharmacy, Cairo university
23	<b>Dr. Noha Salah el din El Baghdady</b> Lecturer - Clinical Pharmacy-Faculty of Pharmacy, BUE	24	<b>Dr. Omar Abouelata</b> Preparedness, Surveillance and Response Technical Officer, WHO
25	<b>Dr. Shima Nasr Eldien</b> Head of Rational Drug Use Unit, <i>DU &amp; PP GA</i> , EDA	26	<b>Dr. Sherif Kamal</b> Clinical Pharmacy Programs Director, Children Cancer Hospital Egypt
27	<b>Dr. Sarah Saad</b> Former Member of G.A of Drug Utilization & Pharmacy Practice Administration	28	<b>Dr. Yaser Abdelfattah</b> Senior Clinical Trial Specialist, NCI Cairo University



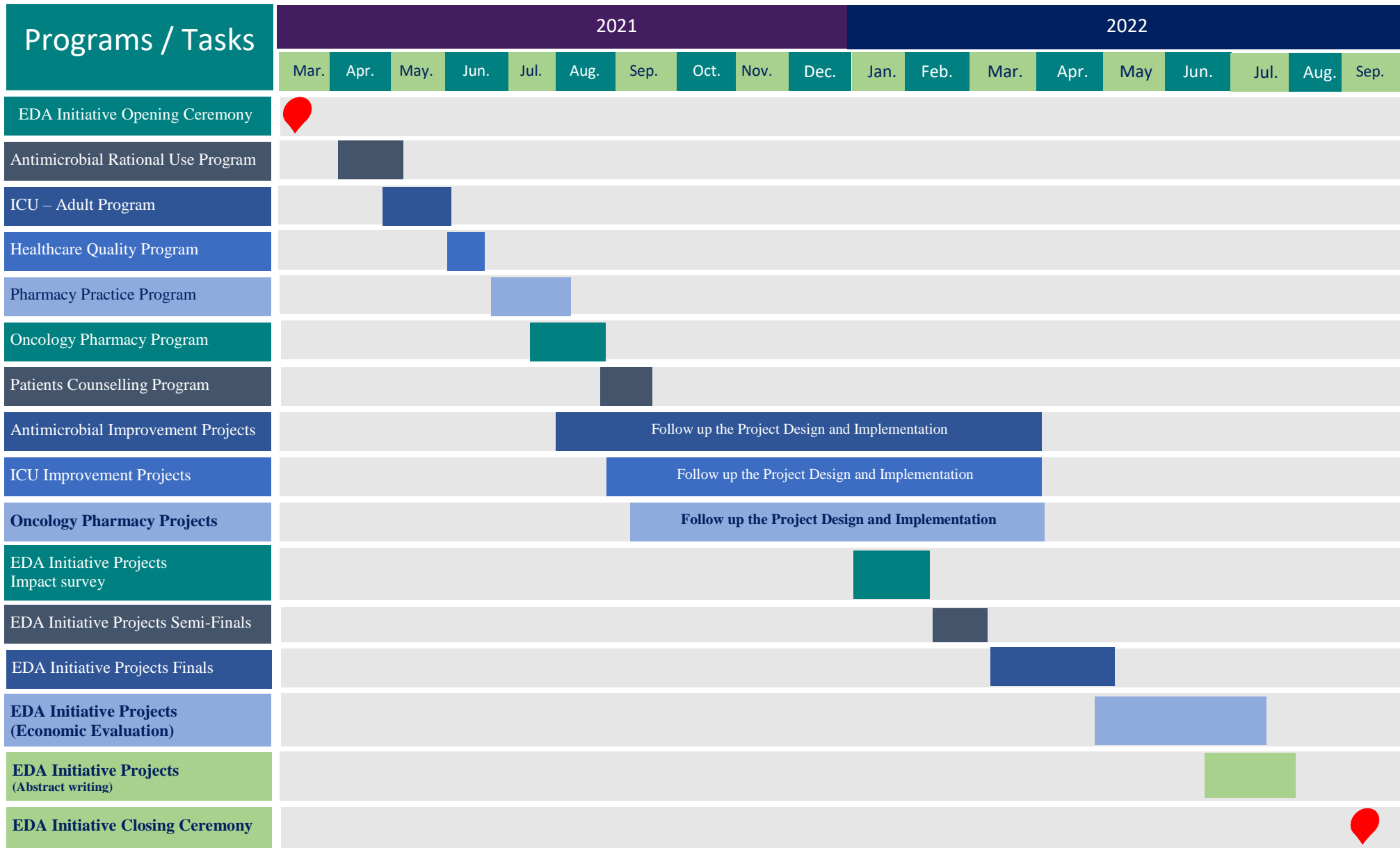
## EDA Initiative - 100 Projects Jury Members (Alphabetically)

1	<b>Prof. Dr. Amani Abdallah</b>	Dean of Faculty of Pharmacy, Al-Azhar University (Girls) Vice President of Pan African University, Regional Director of Association of African Universities
2	<b>Prof. Dr. Hossam Arafa</b>	Consultant of the General Authority of Healthcare, GAH.
3	<b>Prof. Dr. Khaled Meselhy Ibrahim</b>	Professor at Faculty of Pharmacy, Cairo University.
4	<b>Prof. Dr. Maha Eltouny</b>	Professor of Internal Medicine and Infection Control Consultant, Ain Shams University.
5	<b>Prof. Dr. Mohamed Abdelatty Rabeh</b>	Dean of Faculty of Pharmacy, Modern University for Technology & Information (MTI).
6	<b>Prof. Dr. Mohy Almazar</b>	Dean of Faculty of Pharmacy, British University in Egypt (BUE).
7	<b>Prof. Dr. Mona Shalaan</b>	Head of Clinical Pharmacy Practice Department, Misr International University (MIU).
8	<b>Prof. Dr. Nirmeen Abo Alsoud</b>	Associate Professor Doctor of Clinical Pharmacy, Sinai University.
9	<b>Dr. Noha Salah El Baghdady</b>	Lecturer - Clinical Pharmacy-Faculty of Pharmacy, BUE.
10	<b>Dr. Islam Anan</b>	CEO - Accsight Lecturer of Pharmacoeconomics and Pharmacoepidemiology.
11	<b>Dr. Sherif Kamal</b>	Clinical Pharmacy Program Director, Children Cancer 57357.
12	<b>Dr. Ghada Ali Younis</b>	General Manager of the General Administration of Pharmacy Practice & Drug Utilization, Executive Director of the Initiative, <i>DU &amp; PP GA, EDA</i> .
13	<b>Dr. Heba Anees</b>	Head of Inpatient Clinical Nutrition Services, NCI.
14	<b>Dr. Yara Khalaf</b>	AMR Consultant, Country Office, WHO.
15	<b>Dr. Yasser Abdelfattah</b>	Senior Clinical Trial Specialist, NCI.

## Central Hospitals Coordinators

	Dr. Hadeer Gamal	Central Hospitals Coordinator – University Hospitals
	Dr. Waleed AbdelRahman	Central Hospitals Coordinator - Specialized Medical Centers
	Dr. Mai Galal	Central Hospitals Coordinator - Specialized Medical Centers
	Dr. Nagwan Abdel Rahman	Central Hospitals Coordinator - General Authority of Health Insurance
	Dr. Shaimaa Mohamed	Central Hospitals Coordinator - General Authority of Health Insurance

## EDA initiative - 100 Projects Gantt chart



## Summary of Pharmaceutical Care Initiative - Excellent Pharmacy Practice

### (EDA initiative - 100 Projects)

Based on the vision of the **Egyptian Drug Authority** and its important role in achieving the application of best practices in the pharmaceutical field, promoting the profession of pharmacy, raising the professional competencies of the Egyptian pharmacists, and developing the pharmacy services provided to the patient, the Pharmaceutical Care Central Administration of EDA issued the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects) in line with Egypt's 2030 vision for sustainable development.

As means to; ensure the highest levels of pharmaceutical care, ensure patient safety, and achieve the optimal use of the drug based on evidence-based medicine.

The Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects) was held under the patronage of **Prof. Tamer Essam**, Chairman of the Egyptian Drug Authority, and **Prof. Aiman El Khatib**, Deputy Chairman of the Egyptian Drug Authority (EDA).

Throughout the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), the following programs were conducted and provided:

1. Antimicrobial Rational Use
2. Clinical Pharmacy - Intensive Care (Adult)
3. Quality for pharmaceutical care - Antimicrobials
4. Quality for pharmaceutical care - Intensive Care
5. Pharmacy Practice
6. Oncology Pharmacy Practices
7. Quality for pharmaceutical care - Oncology Practice
8. Patient Counseling

The number of applicants reached 9,235 pharmacists and the number of accepted applicants was 6900 pharmacists in all programs from 25 entities and sectors (public and private health institutions in addition to community pharmacies) were enrolled in this program. The participated entities include University Hospitals, the Secretariat of Specialized Medical Centers, the General Authority of Health Care, the General Organization for Teaching Hospitals and Institutes, the General Authority for Health Insurance, and many health affairs directorates in the governorates, in addition to pharmacists working in private health institutions and community pharmacies.

## **Implementation of Pharmaceutical Care Initiative – Excellent Pharmacy Practice (EDA initiative - 100 Projects):**

### **❖ Implementation Phases:**

#### **1. The qualifying phase (1<sup>st</sup> stage for all participants):**

During which online lectures and workshops were presented on weekly basis for 3 weeks for individual programs and 5 weeks for hospital programs. We act on acquiring pharmacists the competence required for the excellent practice and proper use of the drug.

**3791** pharmacists from health institutions and public pharmacies were trained for 3 weeks for each program.

**611** out of 3791 pharmacists of health institutions were trained for a quality program, an extra 2 weeks to carry out improvement projects in health institutions.

**30** lecturers participated in the completion of this phase.

**130** lectures, workshops, and virtual forums were presented through the programs.

**240** training hours were accredited for all programs.

#### **2. The executive phase (2nd stage for pharmacists who carried out the improvement projects only):**

During which the improvement projects were planned and implemented for 3 months in the field of (antimicrobial rational use, clinical pharmacy – ICU (adult), and oncology pharmacy).

The implementation of these improvement projects was followed up and monitored by 11 central coordinators in the General Administration for Drug Utilization and Pharmacy Practice (DU & PP GA) at the EDA over 3 months of tight follow-up and step-by-step review.

**85** improvement projects were submitted throughout the 3 institutional programs.

**500** pharmacists and more participated in the improvement projects and followed up **32,335** patients in (ICU, CCU, and inpatient departments) and cooperated with nurses, quality and infection control specialists, and ICU physicians.

**66%** of the improvement projects targeted the quality of healthcare and pharmaceutical services,

**68%** targeted patient safety, and **92%** targeted savings in terms of the cost of drug treatment.

#### **3. The final phase: (3rd stage for pharmacists who carried out the improvement projects only):**

During which the following up on the returns, evaluation, and selection of the best improvement projects were conducted.

The semi-final judgment over six sessions through physical attendance in addition to online attendance resulted in ranking the hospitals in first and second levels, where **39** projects stepped up to the first level in all programs and reached the final discussions to compete for the first three winners for each program, **30** projects ascended to the second level and **16** projects to the third level.



The final judgment was held to select the three winners of the first level by a jury comprising a team of experts in various pharmacy disciplines such as the academic staff, professors in the faculties of medicine and pharmacy, WHO representatives, and pharmacy and clinical practitioners. The number of jury members reached 16 arbitrators in 3 programs over 6 sessions (two sessions for each program).

The top three winners of each program will be honored with cash prizes in addition to honorary shields and certificates, and the others - in the first and second levels - will be awarded shields and honors according to each level.

#### ❖ Platform Application:

An interactive platform has been launched for the initiative to deliver online lectures and workshops. Also, a YouTube channel was created where lecture recordings were published. The educational materials, lecture recordings, assignments, workshops, notices, and final exam results have been uploaded for each program group separately. The number of views on YouTube exceeds 100,000 views.

#### ❖ Economic Impact:

### 38 million Egyptian pounds savings

During which monitoring the returns achieved through the implementation of improvement projects participated in the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects) by using the pharmacoeconomics principles to calculate (for example cost and return, cost-effectiveness, cost minimization, avoidance cost, and treatment cost and benefit analysis).

In terms of cost saving of drug treatment, Dr. Islam Annan, doctor of pharmacoeconomics at MIU and the CEO of ACCsight research company has stated that the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects) not only have a clinical impact on the public health of the Egyptian citizen but also have an economic return in terms of improving prescribing efficiency and reducing waste.

A supplementary study was conducted after the projects have been ended in 38 hospitals that participated in the initiative. The questionnaires were also sent to calculate the economic cost and returns then analyze the data and calculate the direct and indirect cost reduction resulting from the implementation of the projects.

An amount of **38 million Egyptian pounds was saved** during the three months of project implementation, with an average of one million EGP per project. It is worth noting that for every Egyptian pound spent, an amount of 38 Egyptian pounds was saved.

Billions of pounds could be saved from the budget of the health and pharmaceutical sector in the Arab Republic of Egypt if the improvement projects that have been tested are generalized with the same approaches, methodology, and application.

#### ❖ Statistics and Results:

- 3791 trainees have completed the all programs.
- 8 training programs.
- 30 lecturers and coordinators.
- 130 lectures, workshops, and virtual forums.
- 16 tests (before and after the start of the program).
- 240 training hours.
- 25 participating sectors/organizations.
- 167 participating hospitals and health institutions.
- 100,000 views on the YouTube channel.
- 9,429,115 Egyptian pounds estimated cost of the initiative.
- 85 improvement projects reached the final phase.
- 37 improvement projects in the Antimicrobial Rational Use field.
- 28 improvement projects in the Clinical Pharmacy – ICU (Adult) field.
- 20 improvement projects in the Oncology Pharmacy field.
- 66% of the improvement projects targeted the quality of health care and pharmaceutical services.
- 68% targeted patient safety.
- 92% targeted the savings in terms of the cost of drug treatment.
- 6 sessions of arbitrations for semi-final judgment.
- 69 improvement projects passed the semi-final judgment.
- 39 improvement projects reached the 1st level.
- 30 improvement projects reached the 2nd level.
- 15 improvement projects in the Antimicrobial Rational Use were escalated to the 1st level.
- 10 improvement projects in the Clinical Pharmacy- ICU (Adult) were escalated to the 1st level.
- 14 improvement projects in the Oncology Pharmacy Practice were escalated to the 1st level.
- 6 sessions of arbitrations for final discussions to define the top 3 winners in each program.
- 32,335 patients have been followed up in (ICU, CCU, and inpatient departments) by 500 pharmacists who participated in the improvement projects.
- 486 flyers, newsletters, and 137 posters were published through the provided improvement projects.
- about 500 drug treatment protocols and policies were issued through the provided improvement projects within the different committees.
- 334 educational lectures targeting 2,344 trainees were presented by the participating pharmacists in their hospitals.
- 45% reduction in medication errors and treatment problems in the hospitals was reported by the participating pharmacists.

## Hospitals' Pharmacy Practice Improvement Projects

### Level 1 Hospitals for the EDA Initiative's Projects

	Hospital Name	Project Name	Abstract Page
<b>1<sup>st</sup> Rank</b>			
1	Zagazig University Hospitals, Supreme Council of University Hospitals (SCUH)	Implementation of ASP in Surgical ICU of Zagazig University Hospital, <b>Rational Antimicrobial Use Program.</b>	<a href="#">25</a>
2	AL-Helal Hospital, Secretariat of Specialized Medical Centers (SMC)	Implementation of the antibiotic protocol in ICU and surgical unit, <b>Rational Antimicrobial Use Program.</b>	<a href="#">26</a>
3	Kafr El-Sheikh Cardiac and Liver Center, SMC	Implementation of VTE prophylaxis protocol in ICU, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">27</a>
4	Tanta Cancer Center, Group 2, SMC	Reduce Rate of Emesis Among Patients Receiving Anticancer Agents of High or Moderate Emetic Risk, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">28</a>
<b>2<sup>nd</sup> Rank</b>			
1	El Karnak International Hospital, General Authority of Healthcare (GAH)	Rational Antimicrobial Use in NICU, <b>Rational Antimicrobial Use Program.</b>	<a href="#">29</a>
2	Ismailia Medical Complex, GAH	Implementation of Medication Reconciliation for ICU patients on admission, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">30</a>
3	Sharq El Madina Hospital, SMC	Rational Use of Steroids for Critically Ill Patients in ICU in Isolation Unit, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">31</a>
4	Damiette Oncology Center, SMC	Decrease Turnaround Time for Patients Receiving Chemotherapy in the Daycare Unit, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">32</a>
5	Minia Oncology Center, SMC	Saturday is Our Myeloma Day, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">33</a>
<b>3<sup>rd</sup> Rank</b>			
1	Mabarat Zagazig, GAH	Rational Use of Meropenem and Linezolid in ICU, <b>Rational Antimicrobial Use Program.</b>	<a href="#">34</a>
2	New Qasr Aini Teaching Hospital, SCUH	Optimization of Empiric Use of Antimicrobials in Intensive Care Units, <b>Rational Antimicrobial Use Program.</b>	<a href="#">35</a>

3	Al-Hussein Hospital, Al-Azhar University, SCUH	Rationalizing the Use of Parenteral Omeprazole in ICU, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">36</a>
4	Alexandria Main University Hospital, SCUH	Implement a Pain Management Policy in Cancer Patients of Alexandria Clinical Oncology Dept., <b>Oncology Pharmacy Practice Program.</b>	<a href="#">37</a>
5	Tanta Cancer Center - Group 1, SMC	Implementation of Administration Policy of Nephrotoxic Platinum-based Anticancer Drugs (Cisplatin, Carboplatin) in Tanta Cancer Center, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">38</a>
6	Elmogamaa Eltibbi Hospital – Tanta, GAH	Reshaping Oncology Pharmacy Services Provided at Elmogamaa El-Tebbi Hospital., <b>Oncology Pharmacy Practice Program.</b>	<a href="#">39</a>

#### 4<sup>th</sup> Rank

1	Nasser Institute Hospital, SMC	Implementation of the Antimicrobial Prophylaxis Protocol in the Neurosurgery Dept, <b>Rational Antimicrobial Use Program.</b>	<a href="#">40</a>
2	Specialized Medical Hospital /Mansoura University, SCUH	Decreasing Medication Errors Related to Sedation and Analgesia in ICU, <b>Intensive Care (Adult) Program.</b>	<a href="#">41</a>
3	Mahalla Cardiac Center, SMC	Education Program for COVID-19 Cardiac Patients in ICU Isolation, <b>Intensive Care (Adult) Program.</b>	<a href="#">42</a>
4	National Cancer Institute (First settlement branch, SCUH	Decreasing Waiting Time of Patient Journey, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">43</a>

#### 5<sup>th</sup> Rank

1	Kafr Eldawar General Hospital, MOH	Decreasing Inappropriate Prescribing of Linezolid in ICU, <b>Rational Antimicrobial Use Program.</b>	<a href="#">44</a>
2	Emergency Hospital- Mansoura University, SCUH	Improving Adherence to Antibiotic Policy, <b>Rational Antimicrobial Use Program.</b>	<a href="#">45</a>
3	Tanta University Hospital, SCUH	Decreasing Medication Errors Related to IV Antimicrobials, <b>Rational Antimicrobial Use Program.</b>	<a href="#">46</a>
4	Suez Canal University Specialized Hospital, SCUH	Decreasing Medication Errors Related to Enoxaparin Prescribing in ICU, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">47</a>
5	South Egypt Cancer Institute, Assiut university, SCUH	Drug-Drug Interaction Implementation System, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">48</a>

## 6<sup>th</sup> Rank

1	Mansoura Ophthalmic Center- Mansoura University, SCUH	Rational Use of Preoperative Cephalosporins in Cataract Surgery, <b>Rational Antimicrobial Use Program.</b>	<a href="#">49</a>
2	One Day Surgeries at Nasr City, SMC	Decreasing Medication Errors Related to Enoxaparin Prescribing in ICU, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">50</a>
3	Gastrointestinal Surgery Center - Mansoura University, SCUH	Decreasing Medication Errors Related to Enoxaparin Prescribing in ICU, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">51</a>
4	Aswan Oncology Center, SMC	Implementation of Hematopoietic Growth Factor Prophylactic Protocols, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">52</a>
5	Tanta Cancer Center, Group 3, SMC	Shifting Continuous Infusion of Fluorouracil to Ambulatory Pumps, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">53</a>

## 7<sup>th</sup> Rank

1	Qena General Hospital, MOH	Implementation of Antimicrobial Prophylaxis Policy at Adult Surgery Unit, <b>Rational Antimicrobial Use Program.</b>	<a href="#">54</a>
2	Women Health Hospital - Assiut University, SCUH	Cost-Effectiveness Use of Anticoagulants in ICU, <b>Clinical Pharmacy Intensive Care (Adult) Program.</b>	<a href="#">55</a>
3	Minya University Hospital, SCUH	Reducing Waiting Time of Patients in Oncology Dept, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">56</a>
4	Dar El-Salam Cancer Hospital, SMC	Decreasing Waiting Time for Outpatients from 1.5 hours to 45 minutes, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">57</a>
5	Banha Hospital for Health Insurance Qalyubia Branch,	Improving Pharmacy Service Provided to Oncology Patients Via Establishment of Clinical Pharmacy Unit, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">58</a>

## 8<sup>th</sup> Rank

1	National Liver Institute - Menoufia University, SCUH	Rational Use of Carbapenem in Hepatology Dept., <b>Rational Antimicrobial Use Program.</b>	<a href="#">59</a>
2	Pediatrics Hospital – Mansoura University, SCUH	The Reducing Vancomycin Use in PICU, <b>Rational Antimicrobial Use Program.</b>	<a href="#">60</a>
3	Kafr Al Dawar Central Hospital, MOH	Rational Antibiotic Use in Pediatric Ward, <b>Rational Antimicrobial Use Program.</b>	<a href="#">61</a>



4	Qena Oncology Center, SMC	Decreasing Adverse Reaction Among People Receiving Geneleukium 300 Mcg, <b>Oncology Pharmacy Practice Program.</b>	<a href="#">62</a>
<b>9<sup>th</sup> Rank</b>			
1	Aswan Oncology Center, SMC	Implementation of Antibiotics Policy for Post-Operative Clean Wound Surgery (Mastectomy and Thyroidectomy), <b>Rational Antimicrobial Use Program.</b>	<a href="#">63</a>

## Level 2 Hospitals of the EDA Initiative's Projects:

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1	Benha Fever Hospital	Development of Antibiotic Formulary.	<a href="#">64</a>
2	Menouf Hospital Ophthalmology	Medication Reconciliation in Inpatient Department.	<a href="#">65</a>
3	Theodor Bilharz Research Institute	Implementing of Antibiotic Sheet in Gastroenterology Department.	<a href="#">66</a>
4	Al-Azhar University in New Damietta	Implementation of Antimicrobial Protocol in Surgery Department.	<a href="#">67</a>
5	Assuit University Heart Hospital	Implementation Of Antibiotic Protocols to Decrease Antibiotic Misuse in Cardiothoracic Surgery Department ICU for Patients After Surgery.	
6	Benha University Hospitals	Implementation of Antimicrobial Stewardship in ICU.	<a href="#">68</a>
7	Al-Zahra University	Applying ASP in The Pediatric Unit.	<a href="#">69</a>
8	Health Insurance Nasr City Hospital	Decrease Use of Ceftriaxone in Surgical Ward.	<a href="#">70</a>
9	Cairo University Hospital	Rationalization of Metronidazole Vials Consumed for GIT Surgical Cases.	<a href="#">71</a>
10	Al-Azhar University Specialized Hospital	Implementation of Antibiotic Reassessment System (72-Hour Antibiotic Time Out Form) in Medical Records.	<a href="#">72</a>
11	Shebin El Kom Ophthalmology Hospital	Rationalizing Pre and Post Prophylactic Antibiotics Use for Cataract Patients.	<a href="#">73</a>
12	Mit-Ghamr Central Hospital	Reduction of Consumption of Vancomycin In NICU.	<a href="#">74</a>
13	Students' Hospital - Cairo University	Optimization of Monthly Consumption Rate of Selected Antibiotics Prescribed From Dermatology Clinic.	<a href="#">75</a>
14	Obour Specialized Hospital, in Suez	Optimize Use of Antibiotic in Pediatric Outpatient Clinic.	<a href="#">76</a>
15	Al-Arish General Hospital, Directorate of Health Affairs in North Sinai	Decreasing The Consumption Rate of Vancomycin At NICU.	<a href="#">77</a>

16	Beni Suef University Hospital	Implementing Local Guidelines for Empirical Antibiotics.	
17	Sohag University Hospital	Optimize The Usage Of Carbapenems with Patients At Post-Operative ICU by Implementation of Guidelines.	<a href="#">78</a>
18	Students' Hospital, Menofia University	Rational Use of Cephalosporines In Outpatient Clinics.	<a href="#">79</a>
<b>Clinical Pharmacy Program - Intensive Care (Adult)</b>			
1	Elmabara Kafr Eldawar	Implementation of Medication Reconciliation for ICU Patients	<a href="#">80</a>
2	El Agouza Hospital	Implementation Of Antibiotic Policy for Community-Acquired Pneumonia (Cap) in ICU.	
3	El Gomhorya General Hospital	Medication Errors in Ordering Process In ICU.	<a href="#">81</a>
4	Mansoura Specialized Hospital & Baniebaid Specialized Hospital	Management of Extravasation of Amiodarone.	<a href="#">82</a>
5	Al- Menshawy General Hospital in Tanta	Decreasing Medication Errors in Hypokalemia Management in ICU.	<a href="#">83</a>
6	Al Helal Hospital	Optimum Medication Management for Enterally Fed Patients.	<a href="#">84</a>
7	Mashtoul El-Souq Hospital	Reducing Medication Errors of LASA And High Alert Medications In ICU.	<a href="#">85</a>
8	Al Salam Specialized Hospital	Medication Errors Of B-Lactam Antibiotic Prescribing in ICU.	
9	Mit Ghamr Central Hospital	Implementation Of Medication Reconciliation In ICU On Admission.	
10	Al-Rajhi Hospital - Assiut University	Reducing The Inappropriate Use of Proton Pump Inhibitors in ICU.	
<b>Oncology Pharmacy Practice Program</b>			
1	Nasr City Cancer Center (NCCC)	Financial Outcome of Implementation of the Dose Capping Policy of Target Therapy in Management of Cancer Patients in NCCC.	<a href="#">86</a>
2	Ain Shams University Hospitals, Oncology Department	Oral Medication Adherence.	<a href="#">87</a>
3	El-Salam Oncology Center	Optimize And Improve Patient Compliance and Safety of Oral Anticancer Drugs.	<a href="#">88</a>

### Level 3 Hospitals of the EDA Initiative's Projects:

	Hospital Name	Project Name
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1	Fayoum University Hospital	Decrease Rate of Consumption of Clindamycin in ICU Patients.
2	Fever Hospital Beni Suef	Antibiogram with Antibiotic Policy.
3	Assiut University Children's Hospital	Role of Clinical Pharmacists in Reducing Antimicrobial Prescribing Errors.
<b>Clinical Pharmacy Program - Intensive Care (Adult)</b>		
1	Nasser Hospital, Beni Suef	Implementation Of Medication Reconciliation System on Transfer to ICU.
2	Mataria Teaching Hospital	Medication Error Management.
3	Center of Cardiac and Digestive System, Sohag University	Management of Antibiotic Misuse In CCU.
4	Kom El Shoquafa Chest Hospital	The Implementation of Nursing Education for Reduction of Administration Errors In ICU.
5	El Sheikh Zayed El Nahyan Hospital	Auto-Stop / Sub Order (ASO) Project.
<b>Oncology Pharmacy Practice Program</b>		
1	Al Helal Hospital Sohag, HIO	Chemotherapy Side Effect Modifications.
2	Ain Shams University Hospitals, Oncology Department	Minimizing Dispensing and Preparation Losses of Chemotherapy.
3	Badr Hospital, Helwan University	Medication Errors Management in Oncology Unit.

## Abstract of Economic Impact of the Pharmaceutical Care Initiative

### EDA Pharmaceutical Care Initiative – Excellent Pharmacy Practice – 100 Projects

**Project Title:** Economic Impact of The Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA Initiative – 100 Projects) on The Egyptian Healthcare System from Provider Perspective.

**Project Team:** Dr. Ghada A. Younis <sup>1</sup>, Dr. Abdulrahman Mohamed Amin <sup>1</sup>, Dr. Abeer Elbehairy <sup>1</sup>, Dr. Eman Elnawasany <sup>1</sup>, Dr. Hebatalla Mohamed Abdul-Aziz <sup>1</sup>, Dr. Kholoud Ahmed Al- Naggar <sup>1</sup>, Dr. Lamis Daa Saeed <sup>1</sup>, Dr. Lobna Samy Younes <sup>1</sup>, Dr. Medhat Abdelhakam Mohamed <sup>1</sup>, Dr. Mona Abo Elsoud <sup>1</sup>, Dr. Mohamed Elsayed Eldesokey <sup>1</sup>, Dr. Nesma Atef Sarhan <sup>1</sup>, Dr. Shimaa Nasr Eldien <sup>1</sup>, Dr. Abanob William<sup>2</sup>, Dr. Ahmed Fawzy<sup>2</sup>, Dr. Islam Anan<sup>2</sup>.

<sup>1</sup> EDA, <sup>2</sup>Accsight

**Introduction:** Based on the vision of the Egyptian Drug Authority and its pioneering role in developing the pharmaceutical services provided to the patient and raising the professional competence of the Egyptian pharmacist, in a way that guarantees the highest levels of pharmaceutical care and ensures patient safety and achieves the optimal use of drugs according to the international references to advance the pharmacy profession. Every day, pharmacists take decisions that positively impact patient journey as well as enhance budget efficiency, in light of the continuous development and ensuring the full utilization of the pharmacists' efforts and potentials, The Pharmaceutical Care Initiative - Excellent Pharmacy Practice 2021 – 2022 was launched to initiative projects to optimize pharmacy practice, develop pharmacists skills and to track the impact of the projects inside hospitals, it was important to evaluate the economic impact of pharmacy practice and the return on investment from applying new pharmaceutical projects.

**Aim and Objectives:** Measuring the economic impact of the executed projects for projects working on efficiency and cost items, specifically the cost savings yielded from executing the project in the 3 months' timeframe of the initiative.



**Methodology:** A 90 minutes quantitative survey was sent to all hospitals participated in the initiative, and 38 projects from 38 hospitals were found eligible for economic evaluation analysis from the 100 projects, the 38 project managers were interviewed using CAWI (Computer-Assisted Web Interview) technique to enter the project details, based on 3 phases, the pre-initiative phase, which is 3 month before the launch of the project in the hospitals and includes variables from direct cost resources used, frequency of usage and price of each variable, followed by the project kick-off phase including any cost incurred due to the project launch, followed by post-initiative phase where similar variables to the pre-initiative phase is recorded adding to it any new variables due to the launch of the initiative or cost due to utilizing the project inside the hospital, then the indirect cost was calculated as time cost of the project staff post-initiative in operating the project and executing their normal routine impacted by the project launch, this time cost is compared in the survey to the pre-launch time cost the staff was consuming in operating the project. The data was then consolidated, cleaned and analyzed using SPSS. Projects were split into 3 categories, Oncology related projects (n=9), ICU projects (n=8) and finally Anti-microbial (ASP) related projects (n=21). Analysis was done using mean under confidence level of 95% excluding outliers.

**Results:** In a period of 3 months after implementing the project, the average cost saving per hospital was calculated to be (986,567 EGP) where Oncology projects yielded the highest cost savings with average of (2,919,654 EGP) per hospital, followed by ICU projects with average of (1,120,597 EGP) per hospital and finally ASP programs with average of (107,043 EGP) per hospital. The total cost savings for the 38 hospitals evaluated was (37,489,556 EGP) for the 3 months' period with oncology projects contributing with 70% of the total cost savings followed by ICU 24% and ASP 6%. The cost of applying the projects was mainly training instructors costs, which was donated for free from the instructors, training digital platform which was donated by a pharma partner to the EDA, the cost of this economic impact study was also donated by Accsight thus cost calculated were the direct cost of the meetings logistics including coffee breaks, and the indirect cost presented as the absenteeism of the hospital staff to attend trainings, time cost of EDA staff to prepare the initiative logistics, from pre-launch phase till the generation of the results of the economic impact study, total cost of executing the initiative to the 100 projects was 1 million EGP versus the 37.5 million EGP benefit demonstrated above as cost saving. Thus 1 EGP spent on enhancing the performance of pharmaceutical practices yielded 37.5 EGP benefit.

**Conclusion and Recommendations:** The Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA – 100 projects) supported Egyptian pharmacists and resulted in improvement projects that had a real impact on the healthcare system in Egypt and contributed to the cost-saving of drug therapy directly and indirectly. We recommend the continuation of the projects inside the hospitals evaluated as well as generalizing the experience to all healthcare institutions in Egypt to optimize the use of pharmaceutical practices in both enhancing patient journey inside the hospitals and efficiency in utilizing hospital resources.

**End.** Reviewed and edited by Islam Anan

## Abstracts of Hospitals' Pharmacy Practice Improvement Projects

**Zagazig University Hospitals**  
(Project code: EDA-UNI-ASP-081)



**Project Title:** Implementation of ASP in surgical ICU of Zagazig University Hospitals

**Project Team:** Hanan El Gebaly, Soha Ramadan, Amira Soliman, Heba Mahmoud, Mariem Sameh

### Problem Statement and Objectives:

This problem briefly: increase consumption of antibiotics in the hospital due to lack of good antimicrobial policy for prescriptions and dosing. Our project smart objective: decrease percentage of antibiotics consumption DDD/100 patient days and cost related to misuse for (ampicillin/sulbactam, clindamycin, cefoperazone/sulbactam, piperacillin/tazobactam, cefipime, ceftazidime ) in surgical ICU by 30% at end of December 2021.

### Methodology:

Design antibiotic sheet form with making antibiogram for the last year, establish empirical antibiotic protocol according to antibiogram, measuring adherence to empirical protocol by checking the completed forms and also the difference in consumption before and after starting the project implementation, make awareness program to make sure for acceptance of protocol all over hospital.

### Results:

We exceeded the target of our goal in decreasing consumption of (piperacillin/tazobactam, cefipime) by more than 80%, clindamycin by more than 50% Percentage of antibiotic sheet compliance reached 73%, We decrease length of stay of the patients in ICU. and decrease morbidity and mortality rate and now we are working in these statistics.

### Conclusion and recommendations:

**Every member has a role to do as follow:**

- How to achieve success in rational use of antibiotics?
- Enhance infection prevention and control
- Control the source of infection
- Prescribe antibiotics when they are truly needed
- Prescribe the appropriate antibiotic at the right time with adequate dose
- Use the shortest duration of antibiotics based on evidence
- Reassess treatment when culture results are available
- Educate staff

## Al helal Hospital, SMC (Project code: EDA-MOH-ASP-024)



**Project Title:** Implementation of antibiotic protocol in ICU.

**Project Team:** Shaimaa Hassan Helal, Esraa Saeed, Toqa Mohammed, Amira Mohamed, and Rita Sabry

### Problem Statement and Objectives:

Dramatic increases in antibiotic utilization in the hospital continue to drive antibiotic resistance among hospital-acquired pathogens, which is associated with increased length of stay, mortality, and costs. This project was conducted to evaluate the current use of antibiotics, their safety, and cost, and to implement the antibiotic protocol in ICU to decrease the percentage of medication errors related to antibiotic misuse.

### Methodology:

All of the challenges and work obstacles linked to antibiotics in AL-HELAL hospital were identified through brainstorming and group talks. A team was formed to carry out the project, which began with an understanding of the problem's core causes and the creation of a list of solutions, followed by the choose the best solution. The team created an antibiotic policy in the ICU and performed educational lectures and on-the-job training sessions for all healthcare staff. The results were then represented graphically.

### Results:

Starting from April 2021 and until November 2021.

- Medication Errors related to antibiotics' use in ICU decreased by 74%.
- Antibiotics' consumption by (DDDs) decreased by 32%
- Antibiotics' cost decreased by 113,893 EGP.

### Conclusion and Recommendations:

Establishing an updated antibiotic protocol according to hospital anti-biogram, as well as increased training and awareness of the health care team and approving a restricted list of antibiotics, Aware List Booklet & Antibiotics Sheet, all helped in decreasing medication errors, side effects, and antibiotics resistance.

## Kafr Elshiehk Liver Center, SMC

(Project code: EDA-MOH-ICU-104)



**Project Title:** Implementation of VTE prophylaxis protocol in ICU.

**Project Team:** Marwa Talha, Randa Ahmed Ghanem.

### Problem Statement and Objectives:

Venous thromboembolism (VTE) is the third most common cardiovascular diagnosed disease. In KFS Liver center, anticoagulants are prescribed to all patients admitted to ICU as VTE prophylactic therapy without assessing padua score or IMPROVE bleeding risk score, that may expose some patients to bleeding and high-cost burden due to misuse of anticoagulants. The objectives are: reduction of prescribing medication errors related to misuse of VTE prophylaxis therapy in patients with high risk of bleeding with IMPROVE-bleeding score  $\geq 7$  by 80%, reduction of prescribing medication errors related to overuse of VTE prophylaxis therapy in patients with padua score  $< 4$  by 40% and money saving by avoidance of prescribing unrequired anticoagulants by the end of December 2021.

### Methodology:

Data collection, identifying percentage of medication errors related to misuse of anticoagulants and representing the data in tables for 3 months. implementation and approval of VTE prophylaxis protocol for critically ill patients in ICU and finally Analysis of 3-months collected data using charts.

### Results:

The reduction in percent of medication errors reported during the check phase due to anticoagulants misuse is about 58% and percent of cost saving is about 57.2% that represents about 5521 L.E. / month. This obviously decreases reported adverse effects and cost of this misuse. **Conclusion:** Implementation of VTE prophylaxis protocol using risk assessment models RAM is effective in reducing adverse effects and cost burden that was reported due to misuse of anticoagulants for VTE prophylaxis.

## Tanta Cancer Center (Group 2), SMC

(Project code: EDA-MOH-ONC-162)



**Project Title:** Reducing the rate of emesis among patients receiving an anticancer agent with a high or moderate emetic risk.

**Project Team:** Ziad Mehrez, Amr Abdelmoamen, Rehab Mostafa, Ghada Taher, Aya Bauomy, Noha Refat, Randa Hassan, Aya Gharieb, Ahmed Elgibaly

### Problem statement and Objectives:

Nausea and vomiting associated with cytotoxic chemotherapy hurt cancer patients and may cause several problems such as an esophageal tear, fractures, malnutrition, dehydration, acid-base and electrolyte changes, and patients' refusal to continue chemotherapeutic cycles that lead to decreasing health-related quality of life (HRQL) and compromising treatment efficacy. Therefore, the prevention of CINV has a vital role in the overall management of anticancer treatment. The project objective is to reduce the rate of vomiting among patients in the inpatient and chemotherapy day unit, which leads to a positive impact on the patients such as improving the HRQL of cancer patients, decreasing the risk of hospitalization, improving patient safety, and reducing the cost of complications associated with severe vomiting.

### Methodology:

Initially, we had to set the benchmark so the first questionnaire was designed as a data-gathering tool that helped us collect information about cancer patients who received highly emetogenic (HEC) or moderately emetogenic chemotherapy (MEC) and experienced CINV in the inpatient and chemotherapy day unit (The total number of patients that participated in the questionnaire was 324). The CINV risk assessment form and application were created to help physicians and clinical pharmacists assess patients rapidly. Preparation of Antiemetic Protocols based on NCCN Guideline Version 1, 2021. Discussion with P&T Committee about the addition of Olanzapine used in the management of CINV to the drug formulary. Training program for clinical pharmacists covering several topics related. The self-care education program was conducted through direct contact between the patient and the clinical pharmacist, flyers, and a short video in the patient waiting area and chemotherapy daycare. Interventions between clinical pharmacists and treating physicians to modify the antiemetic protocol to be adherence to NCCN guideline. The second questionnaire was designed to measure the outcome of the interventions and the changes made. Several meetings were held with doctors, pharmacists, and nurses to discuss the project and explain its benefits.

### Results:

Before the interventions, the baseline was 211 patients [65.1%] out of 324 who experienced CINV, after the combination of medicine and non-medicine interventions to control the intensity of CINV, the rate decreased to 74 patients [22.8%] who experienced CINV per month.

### Conclusion:

A combination of medicine and non-medicine interventions and some required changes implemented during the project lead to a positive impact on the cancer patients, improving patient safety and health-related quality of life.



## El karnak International Hospital

(Project code: EDA-MOH-ASP-039)

الهيئة العامة للرعاية الصحية  
فرع الأقصر  
مستشفى الكرنك الدولي



**Project Title:** Rational Antimicrobial Use in NICU

**Project Team:** Eman Samir, Gehad Mohamed, Meriam Elkes baseleos, Mariana Magdy, Hagar Nasr, Dina Ahmed, Fatma Abd el naby, Mira Zakaria and Mervat Adel.

### Problem statement and Objectives:

Increase antibiotic use & medication errors related to it in NICU as in the NICU section, there is no indication form, no antibiotic time out, and no implementation of antibiotic policy.

By the end of November 2021, we can gain the percent of implemented antibiotic indication sheet & approved antibiotic time out within 72 hours from starting antibiotics to at least 50% of admitted neonates in NICU department and decrease the percent of medication errors related to antibiotics by 50 % and gain the percent of cost reduction of (vancomycin & meropenem & metronidazole and ampicillin & sulbactam) to 30%.

### Methodology:

The "FOCUS PDCA" methodology is being used in our project to reduce antibiotic overuse, antimicrobial resistance, and cost. Antibiotic storage, stability, administration, and computing procedures were all presented on posters that were made and exhibited in every department to demonstrate the project's concept to all health care teams. A form for medication errors was produced and filled out by the team. The antibiotic sheet is checked on a daily basis by the NICU staff. Take track of your antibiotic usage at the pharmacy.

### Results:

Increase percent of neonates with antibiotic indication sheet and time out to 83.33%. Decrease percent of antibiotics medication errors from 85.6 % before the project to 43.8 % after the project. Medication Errors in NICU after the project (from September to November 2021). Increase of interventions acceptance rate as follow Dose optimization: (78.3%), Escalation of therapy: (80%) De-escalation of therapy: (60%) & Discontinuation of therapy: (80%). Cost reduction Percent of meropenem 1 gm = 69.5%, metronidazole =10% ampicillin & sulbactam =58%, vancomycin =94.11%

### Conclusion & Recommendations:

"We must coordinate efforts to establish new policies, and revive research activities, we will standardize what we do in the NICU and repeat it in other hospital departments to improve antimicrobial usage, shorten stay times, and reduce antibiotic resistance. "Like the circle, we shall continue to improve." There is no end to it"

## Ismailia Medical Complex (Project code: EDA-MOH-ICU-108)



**Project Title:** Implementation of Medication Reconciliation for Patients upon Transfer to ICU

**Project Team:** Nessrin Alaaeldeen, Mona Hussein, Shaimaa Mohamed, Doaa Rezk

### Problem statement and objectives:

Medication Errors are one of the leading causes of harm to hospital patients, and literature reviews reveal that over half of all hospital medication errors occur at transitions of care. Discrepancies of patient medication orders have been documented by many hospitals. A multidisciplinary check of medication orders revealed that 42% of the orders being reviewed needed to be changed. Medication reconciliation is a formal process for creating the most complete and accurate list possible of a patient current medications and comparing the list to those in the patient record or medication orders to avoid medication errors. The purpose of this initiative is to improve patient safety by ensuring that medications are being accurately and completely reconciled upon transfer to ICU.

### Methodology:

Data were collected from clinical intervention reports of ICU department from Sept.2021 to March 2022. A FOCUS Plan, Do, Check and Act methodology was adopted and various basic and advanced quality methods/tool were utilized:

- Diverse cross functional team with wise decisions collaborated towards a higher impact.
- Brainstorming and Multi voting to prioritize strategies for improvement.
- Fishbone diagram and Pareto chart to identify root causes of the problem.
- Workflow diagram assigning responsibilities and timeframes.

### Results:

Significant Increase in total number of completed reconciled patient sheets after implementation of the project. An increase in admission compliance towards reconciliation from 22% to 86%. Approximately 25% Decrease in the total number of medication errors related to medication reconciliation. Reduce cost approximately 2000le/patient.

### Conclusion and Recommendations:

In conclusion, implementation of the project resulted in a dramatic drop in medications errors for patients transferred to ICU. Recommend to standardize the process throughout different hospital departments. Continue to monitor the process to identify further improvement.

## Sharq Elmadina Hospital, SMC

(Project code: EDA-MOH-ICU-099)



**Project Title:** Rational Use of Steroids for Critically Ill Patients in ICU in Isolation Unit.

**Project Team:** Nada ElSomody, Sarah Mohsen, Shaimaa Alfazary, Dina daif , Hayam Abd-el aziz, Hebat-Allah Mousa, Azza Rashid, Aya Adam, Shaimaa Abd El-Kader, Mona Mahallawy

### Problem Statement and Objectives:

Critically ill COVID-19 patients in isolation ICU unit were prescribed steroids as per latest guidelines. Unnecessary high doses, undue time, inappropriate choice of a molecule or its equivalent, lack of regular physicians' education, and irregular review of patients' files resulted in an increased incidence of harmful and even life-threatening side effects such as hyperglycemia, gastrointestinal bleeding, sepsis, heart failure and increased risk of secondary infections including mucormycosis leading to an increased economic burden on the hospital. Reduction of medication errors related to wrong dose and duration of steroids by 50% in critically ill patient's ICU in isolation unit by December 2021.

### Methodology:

The FOCUS PDCA systematic process involved the following steps:

1. Creating fliers that describe dosages and steroid preparation, as well as soft and hard copies for doctors and nurses.
2. Follow-up papers with documentation for prescription errors, data comparisons, and clinical pharmacists' recommendations.
3. Physician meetings to discuss protocol modifications, as well as stability and adverse events from incorrect dosage and duration.
4. Nurse education and training

### Results:

From September 21 to January 22, we managed to:

- Reduce the Medication error related to dosing and duration of steroids by 50%
- Increase the number of accepted recommendations of clinical pharmacists by 45%
- Improving patient safety

On the economic level, we saved, 784 Dexamethasone Ampoules, 246 Solumedrol Vials, Almost 33,500 L.E. The patient from possible adverse effects including Mucormycosis which is highly fatal and costs almost 75,000 L.E / week.

### Conclusion:

Based on our results, it was very promising to further expand the improvement to other sectors such as the coronary care unit (CCU) and Emergency isolation unit.

## Damietta Oncology Centre (Project code: EDA-MOH-ONC-149)



**Project Title:** Reduce the turnaround time (TAT) for patients receiving chemotherapy in the daycare unit

**Project Team:** Alaa Mohamed Yassin, Neveen Gaber El-Hadidy, Hanaa Asaad El-Mogy, Khaled Mohamed El-Khamisy, Menatallah Elsayed Kamal

### Problem Statement and Objectives:

Cancer therapy is a long and tough journey, and cancer patients deserve all medical service providers' support and care throughout this time.

The long wait for chemotherapy each visit is one of the most painful aspects of this treatment journey, especially since receiving treatment is the last step the patient takes after a long day in the hospital. Our goal is to shorten the turnaround time for patients receiving chemotherapy in the day care unit.

### Methodology:

We began by specifying all time-consuming aspects in our workflow, hoping to figure out a solution to these challenges. We started with designing pre-printed forms in patient files for (patient history, consultant decision and medication order) and a card with the coming visit date to be delivered to the patient each visit. This is a side-by-side to registry of all patients receiving chemotherapy. Finally, an access to obtain the patients laboratory results and an access to the specialized medical boards.

### Results:

We have achieved a number of secondary goals while working toward the core aim of reducing the waiting time for patients getting chemotherapy in the day care unit from two hours to one hour including having accessibility to the specialized medical boards and to the laboratory results.

We succeeded in establishing the regulations governing drug dispensing in the forms we attached to the patient's sheet, making policies more applicable and known by all health care providers, including physicians and pharmacists. In addition, the patient's adherence to the treatment plan's scheduled dates improved.

### Conclusions and Recommendations:

We met our primary objective of decreasing the turnaround time for chemotherapy patients in the day care unit from two hours to one hour. However, we are still talented for more and more including amending the utilized forms used in the patient's sheet to incorporate the dispensing eligibility requirements and to be compatible with our policies updates.

## Minia Oncology Center (Project code: EDA-MOH-ONC-155)



**Project Title:** Saturday is Our Myeloma Day.

**Project Team:** Marwa Moussa, Shahira Amer, Amany Sayed, Gehan Hassan, Amira Teleb, Nourhan Fouly, Nourhan Abobakr.

### Problem Statement and Objectives:

Many anti-cancer drugs are dosed according to the patient's weight or body surface area (BSA). Because of this patient-specific procedure, the vial usually always contains leftover medicine, which is then discarded. This has been identified as a substantial source of waste and a factor in rising cancer treatment costs. Bortezomib is a first in class proteasome inhibitor approved for the treatment of newly diagnosed or relapsed multiple myeloma (MM). The dose for myeloma is 1.3mg/m<sup>2</sup> and the only available preparation in Egypt is a vial containing 3.5 mg of bortezomib. As a result, up to a third of the dose is lost. Our project aims to decrease the waste of Bortezomib 3.5 mg vials by 80% and save about nine Bortezomib 3.5 mg vials per month.

### Methodology:

We picked up our project by following the principles and steps of the FOCUS PDCA methodology. The action plan was developed and implemented, which included approval of the project team's formation; signature approval to collect MM patients on Saturday of every week; announcing to all physicians; informing all MM patients of the decision; applying and revising the VCD protocol; preparing Bortezomib 3.5 mg vial in the I.V admixture room; creating an excel sheet with complete demographic data, protocol, and dispensing date; collecting data from (multiple myeloma patient files, clinical pharmacy datasheets, and iv admixture data sheets); gathering data, and finally discussing the project with the team and applying the recommendations by the members and coordinator.

### Results:

Data was analyzed three months before and after the intervention and revealed a reduction in the per cent of Bortezomib vial waste from 34.3% to 7%. The average 3-month cost savings of Bortezomib vials before and after the intervention was 2486.38 L.E. and 21038.6 L.E. respectively.

### Conclusions and Recommendations:

Sharing the contents of Bortezomib vials between patients is logistically feasible and improves the patient experience by reducing waiting times on treatment days. By collecting Multiple Myeloma patients on a fixed day of the week, we reduced Bortezomib 3.5 mg vial waste by 80% and saved 21038.6 L.E. every month, with an estimated annual savings of 252463.2 L.E. (about 130 Bortezomib 3.5 mg vials). Our results motivate us to apply the same approach to other medications with similar properties.

## Mabaret Zagazig/ Sharkia (Project code: EDA-MOH-ASP-045)



**Project Title:** Rational Use of meropenem and linezolid in ICU.

**Project Team:** Reham Mahmoud, Mona mohammed, Heba nabil Eman Ahmed, heba ahmed, Dalia ibrahem, Amal ibrahem, Hanaa ibrahem, Amal hassan, Asmaa tharwat, asmaa barakat, heba ahmed elsayed, Heba mohammed, Ayman mohammed, Hayam sami, maha abdel hamid, Enas ali, marian Samir.

### Problem Statement and Objectives:

The main issue with our hospital is improper use of empiric antibiotics in the intensive care unit.

#### Objective:

By The End of November 2021 Decrease Percent of errors Related to Misuse of Meropenem and Linezolid by 25%.

### Methodology:

Evaluation of the situation (Data Collection) as per WHO methodology for the Point Prevalence Survey (PPS) on antibiotic use in hospitals were made to patients admitted to the ICU at or before 8:00 a.m. on the days of the PPS (2021/6/1), (2021/6/22), (2021/7/14), and (2021/10/13) - survey abstracted from patient files meeting the eligibility criteria regardless of whether they received antibiotic treatment or not. Information gathered from the following forms: patient, indication, antibiotic, and microbiology

### Results:

By rational use of meropenem and linezolid in ICU.

DDD / 100 patient days Decrease by 40 %, Cost/100 patient days Decrease by 39% (54.000 L. E.), Adherence to antibiotic timeout Increased by 20%, and adherence to documentation Increased by 54% & resulting decreasing the incidence of medication errors as follow:

- Therapeutic failure by 11%, Wrong dose by 55%, Antimicrobial without indication by 43%, Over the duration of linezolid by 53%, No renal dose adjustment by 8%, Using linezolid without MRSA risk factor by 44%.

### Conclusion and Recommendations:

Decrease most of the medication errors of antimicrobial use in ICU achieves:

- Appropriate use of antimicrobial.
- Ensure patient safety.
- Decrease adverse drug reaction.
- Decrease cost.



## New Kasr Al Ainy Teaching Hospital (French Hospital)

(Project code: EDA-UNI-ASP-040)



**Project Title:** Optimization of Empiric Use of Antibiotics in Intensive Care Units

**Project Team:** Abla Ahmed, Sara Saeed.

### Problem Statement and Objectives:

Decreasing the wrongly administered antibiotics will contribute positively to the public health as the resistance to antibiotics will decrease and have a better control over MDR organisms. Empiric antibiotics are continued for a longer duration in our hospital, with no culture results and not according to guidelines which will affect the safety of patients we aiming with our project to improve the overall medical service delivered to patients and decrease the cost of dispensed antibiotics.

### Methodology:

We started by formulating a guideline regarding the empiric use of meropenem and levofloxacin and implementing in the intensive care at Sheriff Mokhtar unit. Next, we following if the antibiotics are prescribed according to the guideline besides following -up the cultures withdrawal with a good documentation. Then, we defining the monitoring measures by calculating Defined Daily Dose (DDD) per 100 patient days before and after. At the end of the project, we analyze the data and report it.

### Results:

The measures were calculated before and after the implementation of project to show decreasing in the number of drug sheets not adhering to guidelines of patients on Meropenem by 54.16% and on Levofloxacin by 67.78%. Also showed decreasing in consumption in terms of DDD of Meropenem by 10% and of Levofloxacin by 62.28%. The money saving was showed decreasing on meropenem by 32.69% and on levofloxacin by 57.23%.

### Conclusion and Recommendations:

This project proved to be successful in:

- 1) Decreasing patients' stay in hospital, and decreasing the danger of nosocomial infections,
- 2) Decreasing the use of wide spectrum antibiotics, and contributing in decreasing antimicrobial resistance,
- 3) Saving hospital resources by decreasing waste due to use of antibiotics for unnecessary duration.

We've started the project on a small scale in one ICU, but our plan is:

- 1) To start implementing the guidelines through the rest of ICUs,
- 2) Spread awareness among the staff about the importance of following the guidelines and
- 3) To establish a standard policy for the rest antibiotics prescription.

**Al-Hussien Hospital, Al- Azhar University**  
(Project code: EDA-UNI-ICU-087)



**Project Title:** Rationalizing use of parenteral Omeprazole in ICU

**Project Team:** Alaa Borhamy, Walaa Sayed, Aya Hassan, Aya Mahmoud, Mostafa Ahmed

### Problem Statement and Objectives:

We found that stress-related mucosal disease including gastric and duodenal stress ulcers can develop in many ICU patients and there is abuse of IV PPI so; we aim to admit SUP protocol to rationalize the use of parenteral omeprazole in ICU, through conversion i.v. omeprazole to Oral form in patients tolerating enteral nutrition. Our objectives are: Increase % of adherence to SUP protocol & decrease % of consumption of diluent for omeprazole in ICU by 30% by the end of November 2021. Decrease % of IV related problems in ICU by 5% by the end of November 2021.

### Methodology:

We did a prioritization matrix & effective achievable matrix to find an opportunity for improvement, organized a team, clarified the process by making a Flow Chart, did a Fish-Bone & Pareto Chart to understand root causes, did a solution matrix & effective achievable matrix to find the best solution, put the plan & the measures, admit a SUP protocol, SUP protocol was approved by general manager of the hospital and heads of the general ICU and internal medicine ICU, we started talking to physicians about SUP protocol and importance of rationalization of SUP, we did a pilot test in one bed in general ICU. no complications were detected, then we spread the whole project to the general ICU and internal medicine ICU and we started doing interventions and gathering data.

### Results:

We found an increase in % of adherence to SUP protocol & Reduction in % of using diluent for omeprazole by 38%. Increase in patient safety and decrease in I.V. related problems in November 2021. Total money saved in November is EGP 1145.81. We aiming to increase total money saved annually about 5,000,000 L.E. if the project is applied to the whole hospital (900 bed).

### Conclusion & Recommendation:

For critically ill patients who are able to receive enteral medications and in whom SUP is indicated, Oral PPIs are preferred rather than any alternative prophylactic agent. Oral route decreases cost over I.V. route. Studies and researches demonstrate that Oral PPIs are as effective as intravenous therapy in bioequivalence.

## Alexandria Main University Hospital (Project code: EDA-UNI-ONC-145)



**Project Title:** Pain Management for Cancer Patients.

**Project Team:** Soha Said, Christine Fayez, Marwa Mahmoud, Somaya Khaled, Reem Hafez, Dalia Yehia, Kyrea Farouk and Salma Abbas.

### Problem Statement and Objectives:

Pain is unpleasant sensory and emotional experience associated with actual or potential tissue damage. A meta-analysis performed in 2016, detected that the prevalence of pain in cancer patients still remains high. Worldwide, over one-third of patients after curative treatment and more than half during chemotherapy treatment. The present study aimed to implement a pain management policy including new pain clinic in the clinical oncology department, Alexandria University. This policy aimed to ensure adequate pain assessment and management. In addition to decrease incidence of adverse and toxicity events related to opioids in cancer patients. This was by intending to reduce number of patients with uncontrolled pain or adverse events from 70 to 20 per month.

### Methodology:

An approval was obtained to establish a pain clinic with the oncologists. Eighteen physicians were invited to attend an educational lecture about pain management, twelve of them responded and knowledge assessment questionnaire was applied. A specific patient profile was designed for such objective. Data were collected by clinical pharmacists at the new pain clinic. Sample consisted of 81 patients. Seventy of them, receiving opioids, were in uncontrolled pain or had serious adverse effects related to opioids.

### Results:

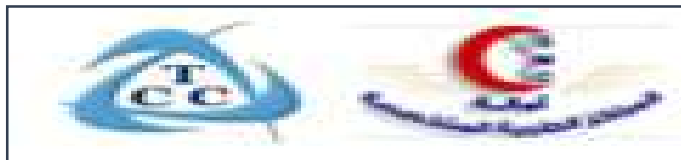
About 81% of patients required pharmaceutical intervention to manage their pain. About 25.5% of patients required shifting to another opioid and 18% required opioid combination. Regarding the side effects of opioid medications, 67% of patients complained of severe gastric side effects compared to only 10% expressed nausea and vomiting, both required pharmaceutical intervention. Collectively, number of patients with uncontrolled pain or adverse and toxicity events related to opioids decreased from 81 to 23 in December, 2021.

### Conclusions and Recommendations:

Despite increased attention on assessment and management, pain continues to be a prevalent symptom in cancer patients. In future, we need to overcome barriers toward effective pain management. Educational programs for oncologists about opioid drugs and their adverse effects. Introducing the collected data directly to the Microsoft system of the oncology department would save more time and effort and facilitate the data analysis.

## Tanta Cancer Center (Group 1)

(Project code: EDA-MOH-ONC-161)



**Project Title:** Implementation of Nephrotoxic Platinum-Based Anticancer drugs (Cisplatin, Carboplatin) Policy for improving renal injury.

**Project Team:** Ahmed Waheed, Mai Elgebaly, Nancy Elshater.

### Problem Statement and Objectives:

Increase incidence of drug induced renal injury due to lack of applied approved policy for: adequate hydration, dose calculation, and patient monitoring and dose adjustment of nephrotoxic agents. This project aim was Implementation of Nephrotoxic Platinum-Based Anticancer drugs (Cisplatin, Carboplatin) Policy for improving renal injury in Tanta Cancer Center with overall compliance of 50% by the end of December 2021.

### Methodology:

For cisplatin protocol: Intravenous hydration pre-, during & post -cisplatin administration was determined & monitored. Approved documented tables of adjusted doses of platinum compounds according to creatinine clearance were used. Determining which cases can be converted to carboplatin, and continuous education of nurses and patients was implemented. For carboplatin protocol: Oral hydration of carboplatin was done after administration, and calculation of Carboplatin dose according to creatinine clearance.

### Results:

For Cisplatin: The physician ordered the standard dose (full dose in the original protocol) regardless the kidney function of the patient (Sr.Cr. value) and after the revision of Lab tests of the patients including Sr.Cr. value of each of them by clinical pharmacist and calculation of Cr. Cl, all of these patients needed urgently dose adjustment, so the clinical pharmacy member consulted the physician and he agreed to modify the dose, and the modified dose was calculated. For Carboplatin: Values of Serum Creatinine of 11 Patients- receiving carboplatin after policy implementation- were reduced over a period of 1month due to accurate calculation and adequate oral hydration protocol. These results indicate the significant effect of policy of prevention of elevation of SrCr levels from normal to abnormal limits. Values of Serum creatinine of 13 Patients- receiving carboplatin after policy implementation- were the same (no change) over a period of one month. It is obvious that all values are within normal levels.

### Conclusion and Recommendations:

Further long-term studies are recommended with larger sample size for further investigation of the new Cisplatin and Carboplatin protocols to insure their favorable outcome and to reach sound conclusions. Carboplatin desensitization protocol is an extra procedure to manage hypersensitivity reaction, it permits patient to continue chemotherapy cycles successfully instead of alternating, Carboplatin with other chemotherapeutic agents like; Capecitabine (Xeloda).

## El-mogamaa Eltebbi Hospital Tanta, HIO (Project code: EDA-MOH-ONC-151)



**Project Title:** Reshaping oncology services provided at El-Mogamaa El-Tebbi hospital Tanta

**Project Team:** Duaa Mohamed, Somia Elsaggan, Aya Labib , Mohammad Elgamal , Sameh Nabih and Salma Wahby

### Problem Statement and Objectives:

For quite some time the chemotherapy receiving patients has suffered from several issues including long preparation time and medication errors which affected their satisfaction, so we took the opportunity to improve patient satisfaction by searching deep for the root causes and brainstormed the possible solutions. The project objectives: decreasing average preparation time of chemotherapy required for all oncology patients per day to 150 min, decreasing no. of medication errors and Improving patient satisfaction to 80 %.

### Methodology:

The improvement methodology that was use in this project is focus pdca6 meetings in six months were held to document the journey of improvement and several tools were used like (Brainstorming — armi tool – flow chart – fishbone diagram – pareto chart – Gantt chart – project chart- prioritization matrix - survey - histogram).

### Results:

Decreasing preparation time from 300 to 150min, increased the number of cases per day from 25 to 60 patient leads to cut down of patient's waiting list. This 50 % time saving, saved patients from suffering of going to external institutions (external contractors), with money saving 1864033 EP. Medication error decrease by 90% and Patient satisfaction increase from 58.5% to 89.8%.

### Conclusion and Recommendations:

The project has achieved the following deliverables (Preparation time decrease to 150 minutes - Medication error decrease by 90% - Patient satisfaction 89.8%) and these deliverables should be maintained by applying the solutions continuously. The project has achieved its goals and we were ready to do more such as drug formulary and preprinted order.

## Nasser Institute Hospital for Research & Treatment, SMC.

(Project code: EDA-MOH-ASP-058)



**Project Title:** Implementation of the antimicrobial prophylaxis protocol in the neurosurgery department at Nasser Institute Hospital (NIH)

**Project Team:** Mai Ali Ahmed Mohamed, Naglaa Mohamed Abdel Maksoud, and Radwa Salah Lotfy Abdel-Rahman.

### Problem Statement and Objectives:

Developing a program to properly use antimicrobials is essential for inpatient facilities to decrease the incidence of resistance, reduce the development of multidrug-resistant organisms, and improve patient care. According to the hospital data, more than 90% of neurosurgical cases were prescribed inappropriate antibiotics for a duration longer than 48 hours as the NIH antibiotic committee stated, and over 80% of this antibiotic misuse is represented in the unnecessary use of dual  $\beta$ -lactams. Hence the objectives were established to increase the percentage of compliance to antibiotic prophylaxis protocol by 40% by the end of December 2021 and to decrease the percentage of unnecessary dual  $\beta$ -lactams by 40% by the end of December 2021.

### Methodology:

The FOCUS PDCA model for improvement projects was adopted. The project steps included; conducting meetings with the leaders and consultants, modifying the antibiotics dispensing policy, disseminating the protocol, and training physicians and pharmacists. Patients' data were collected prospectively using a data collection form during the period from August 2021 to December 2021, divided into; the pre-implementation phase (August 2021) and post-implementation phase (September 2021-December 2021). The data was analyzed using Microsoft Excel Office 2007. The percentage of protocol compliance, the percentage of unnecessary prescribed dual  $\beta$ -lactams, and the percentage of cost reduction were calculated.

### Results:

Sixty patients' data showed that the percentage of protocol compliance raised to 14%, cost reduction reached 22 %, and unnecessary dual  $\beta$ -lactams declined from 80 % to 45 % compared after implementation to baseline.

### Conclusion and Recommendations:

Managerial support is a crucial element in implementing antimicrobial prophylaxis protocol. The collaborative efforts helped raise the protocol compliance and achieved cost reduction. A repeated PDCA cycle with an expanded scale or scope is needed for different departments in the hospital.



**Specialized Medical Hospital /Mansoura  
University.**  
(Project code: EDA-UNI-ICU-084)



**Project Title:** Decreasing Medication Errors Related to Sedation and Analgesia in ICU.

**Project Team:** Rasha Elghareeb, Nada Elsaed, Maha Zuhdy, Fatma Naem.

**Problem Statement and Objectives:**

Increasing the medication errors and the rate of dispensing sedation and analgesia medications in the last 2 years due to increasing the rate of ICU admission due to COVID19 hit and intubation take place makes the patient needs for sedation and analgesia.

**Objective:** By the end of December 2021, decreasing Medication Errors Related to Sedation and Analgesia

**Methodology:**

Organizing the team, collecting brainstorming, different meetings with the staff, clarifying the cause, fish bone, and Pareto diagram, adding a protocol, approval of the protocol by pharmacy therapeutic committee, starting implementation of the protocol in the ICU, educational lectures for nursing staff and physicians, meeting with physicians, follow up of the patient files, adding clinical pharmacist recommendation, follow up of the acceptance, daily follow up and collecting the data for the cost reduction on October –November – December.

**Results:**

Lifesaving: decrease in the medication errors for the tested medications (midazolam, propofol, fentanyl) by more than 30% Economic outcomes cost reduction of the listed medications varies from 29 – 54 % of the total cost.

**Conclusion and Recommendations:**

The project had Avery good impact and the results were more than satisfactory, so recommended to generalize the project to all the ICU units.

## Mahalla Cardiac Centre (Project code: EDA-MOH-ICU-112)



**Project Title:** Education program for COVID-19 cardiac patients in isolation ICU.

**Project Team:** Eman Ali, Rehab Magdy, Raghda Kamal, Sara Samy , Samar Kamel , Aya Rabie, Mariam Mohamed , Basma Farrag .

### Problem Statement and Objectives:

Patients discharged from ICU isolation without education as Pharmacists were not involved in ICU isolation that's because we didn't have clear information about COVID -19, and flyers were not ready to be used which increase the readmission rate of patients with complications increase the total patient cost.  
Objective: By the end of December 2021 increase the percentage of educated patients in ICU patients from 55 % to 90 % and decrease patient readmission percentage from 21 % to 10%.

### Methodology:

This study is prospective and the data is collected weekly by our team of clinical pharmacists. Analysis of data was done and displayed using Charts and tables. The time of collecting data is from May 2021 to December 2021. Sampling included all patients in cardiac isolated ICU and excluded other ICUs. We were able to achieve our goals in isolation-ICU by Continuous Webinars, preparing flyers, and providing pharmacists with sufficient information about the disease.

### Results:

Availability of flyers, a clinical pharmacist in daily bed round, and reconciliation lead to an increase in the percentage of patient education. Patient education about suitable lifestyle and prevention of medication duplication, which appeared through the remarkable decrease of the total patient cost. Patients follow up after discharge by phone contact to ensure medication adherence, instructions, and labs that decrease the readmission rate.

### Conclusion:

Increase patient educated to 94 %, decrease readmission rate to 5%, cost-saving of drugs by 16644 L.E, cost-saving of readmission by 44700 LE, and total cost-saving 61344 L.E. We found that there is an important role of clinical pharmacists in daily bed rounds in isolation ICU.

## National Cancer Institute (Project code: EDA-UNI-ONC-158)



**Project Title:** Waiting Time Reduction in the Day Care Unit

**Project Team:** Mennatallah Osman, May ELgazzar, Howida Ali, Hebbatallah Ibrahim, Noha Anis, Frida Bilal, Alaa Ibrahim, Dalia Abdel Al Moneam.

### Problem Statement and Objectives:

Increasing in the outpatient waiting time, leading to crowding of patient at the end of the day and adverse reactions may happen to patient due to increase rate of infusion of chemotherapy by nurses to quick the process. Also, it may cause throwing of the drug as patient may leave without taking his medication. Target time for files in the pharmacy to be 10 min for oral medication and 20 min for I.V. medication

### Methodology:

- 1- implement a network to connect between outpatient pharmacy and mixing of pharmacies
- 2- Increase the numbers of weight and height scales in each clinic,
- 3- Create a check point between the clinic and pharmacy to ensure there is no missing data
- 4- Create a policy about the right way to write the patient order and educate nurses about it.

### Results:

No return files, achieve 20 minutes for day care chemotherapy file, and 10 minutes for dispensing chemotherapy tablets. Decrease the need to reschedule chemotherapy session which lead to improve in clinical outcome, decrease adverse reactions (no crowding at the end of the day) and, decrease drug waste as no patient leave without taking his prepared medication.

### To minimize time loss in the outpatient clinic:

- Revising the patient file before entering the pharmacy.
- Completing all required data at the entry e.g. Weight, lab results ...
- Double check before delivering the medicine to the patient.
- Spread the changes through the discussion with other hospital departments members in weekly and monthly meetings, through adding the written steps (project) as constant routine in the clinic by co-operation of all clinic members (physicians, pharmacists, nurses, porters and secretaries).

## Kafer Eldwar General Hospital

(Project code: EDA-MOH-ASP-038)



**Project Title:** Decreasing inappropriate prescribing of Linezolid in ICU

**Project Team:** Amal Mabrouk Shouair, Rawia Salah Zaki, Manar Mohammed Khamis

Dina Hamed Elmaghraby, and Yosr Magdy Abd ElHameed.

### Problem Statement and Objectives:

Inappropriate use of linezolid in ICU leads to the emergence of antibiotic resistance in addition to negatively affecting hospital financial resources. Consequently, we decided to determine the rate and the types of infection in ICU, implement Linezolid use policy, and develop MRSA treatment guidelines in ICU by the end of December 2021.

### Methodology:

We included all ICU patients with any type of infection. We followed the PROVAUR stewardship program of linezolid resistance which was applied in a tertiary university hospital in Spain. The project phases included the pre-implementation phase (from June to August 2021) and the post-implementation phase (from September to November 2021).

### Results:

During the six months' project period, the linezolid consumption declined from 430, 440, 420 vials in the pre-implementation months to 372, 322, 304 vials in the post-implementation months. This implies a reduction in linezolid consumption by 22.6 % and a cost saving of 19,564 EGP including costs of both vials and infusion sets. The predicted annual cost saving was calculated, it reached 78,252 EGP.

### Conclusion and Recommendation:

Applying the linezolid use policy in ICU resulted in reducing vial consumption and hence cost reduction. Therefore, we recommend to continue applying this policy in ICU and expanding it to all hospital units. We also recommend developing other antibiotic use policies.

## Emergency Hospital, Mansoura University (Project code: EDA-UNI-ASP-047)



**Project Title:** Improving Adherence to Antibiotic Policy.

**Project Team:** Omayma Atallah, Abeer Sakr, Mona Fahmy, Waleed Essam, Rokaya Ali.

### Problem Statement and Objectives:

Antibiotic (AB) misuse increases antibiotic resistance, leading to prolonged length of stay, increased economic burden, and an increase in morbidity. Proper use of antibiotics ensures patient safety and improves efficiency by improving patient quality of life. Our objective is to improve the adherence to antibiotic policy by increasing the number of completed antibiotic forms by 60%, improving patient safety, decreasing the percentage of AB prescribing errors, decreasing AB consumption, and cost reduction.

### Methodology:

**Methodology:** We used quality tools (Fishbone and Pareto chart for root causes prioritization) to understand the root causes of AB misuse, it is found that the main cause was the lack of adherence to the antibiotic policy of the hospital. Solutions suggested were confirming the Implementation of the antibiotic use form in the patient sheet, spreading awareness of antibiotic protocol, and Increase Lab financial resources.

### We applied the PCA cycle:

**Action Plan:** Antibiotic policy is implemented in ICU from 15th August to 30th November 2021.

**Project Implementation:** Updating Antibiotic policy, spreading Antibiotic ordering form, counting completed form, collecting the dispensing consumption of Antibiotic, recording medication errors related to Antibiotic.

**Evaluation and monitoring:** Comparing between Percent of completed Antibiotic forms to the total number of forms before and after implementation of the AB ordering form in the patient file. then comparing between Percent of Antibiotic prescribing errors to the total number of errors before and after implementation of the AB ordering form. Finally, DDD consumption and cost reduction of linezolid, Imipenem, and Levofloxacin were calculated.

### Results:

During the period from July 2021 to November 2021, the percentage of completed AB forms to a total number of forms was increased from 34% in July to 82% in November, percentage of AB prescribing errors to a total number of AB medications errors was decreased from 62% at July to 32% at November. DDD consumption of linezolid, Imipenem, and Levofloxacin was reduced and total cost reduction by 17.5 %.

### Conclusion and Recommendation:

Improving Adherence to Antibiotic Policy leads to improving economic outcomes and patient safety. Applying quality may need to spend some money, effort, and time but surely it saves a lot and the final results deserve it.

## Tanta University Hospital (Project code: EDA-UNI-ASP-076)



**Project Title:** Decreasing Medication Errors Related to IV Antimicrobial Administration

**Project Team:** Nanet Younan, Doaa Waheed, Rania Gaweesh, Eman Ahmed.

### Problem Statement and Objectives:

Errors in the intravenous administration of antimicrobials are frequent events, among them, the incorrect rate is the most common cause which affects both the patient safety and the cost. Our objective was to improve nursing Staff knowledge about the correct rates of antimicrobials administration by 35%, decreasing the rate of adverse events and the financial cost resulting from incorrect rates by 30% and 50% respectively by the end of December / 2021 in Internal and Surgical Urology Department of Tanta University Hospitals.

### Methodology:

One group of nurses pre-and post-project design was used. This project has been conducted among 40 nurses assigned to administer medication to patients in the urology department of TUH. Interventions:

- 1) Structure a Questionnaire to assess nurses' knowledge related to the correct rate of IV antimicrobial administration.
- 2) Spreading awareness about the correct rate of administration and the adverse effects of wrong procedures during administration (lectures, training sessions, educational posters, and informative flyers).
- 3) Human development training to provide psychological support for nurses and emphasize their role.
- 4) Observational checklist to determine the rate of adverse events related to the incorrect rate of intravenous antimicrobial administration.
- 5) Calculating the financial cost resulting from these medication errors.

### Results:

After three months of implementation of the project, nurses' knowledge about the correct rate of IV antimicrobial administration Increased by 62.5% which had a good impact on other measures. Cost-saving was Increased by 27.5% While the rate of adverse events decreased by 29%.

### Conclusion and Recommendations:

Improvement observed was more than expected or aimed so our team decided to standardize the process and spread our intervention in another department.



**Suez Canal University specialized hospital**  
Suez Canal University  
(Project code: EDA-UNI-ICU-134)



**Project Title:** Decreasing medication errors related to Enoxaparin prescribing in ICU

**Project Team:** Marwa Mahmoud, Marwa Abu Baker, Dalia Sayed, Aliaa Adel, Rana Hassan, Hossam EL Din Mostafa

**Problem Statement and Objectives:**

Enoxaparin is considered one of the most important and common prescribed medications in ICU with repeated prescribing medication errors that can cause fatal adverse effects and consume hospital resources for instance; dosing, drug without indication, and duration of treatment. Hence, selecting "decreasing medication errors related to Enoxaparin prescribing in ICU", we aimed to decrease medication errors, increase pharmacist's commitment to revise ICU patient's prescriptions plus fulfill enoxaparin follow up sheets and decrease money consumed by enoxaparin use.

**Methodology:**

We used FOCUS PDCA quality tool to select and implement the most efficient project. By clarifying the process of Enoxaparin prescribing and understanding root causes of the problem we found that Implementation of protocol for Enoxaparin prescribing and Designing a follow up sheet for proper protocol application will be a proper solution. We started with collecting medication errors related to enoxaparin prescribing and formulating a protocol according to guidelines. We got the approval and the protocol was implemented in November 2021. Next we launched an orientation for ICU physicians about the use of protocol in the end of our action plan and we calculating the measured that were selected for this project to be analyzed and reported.

**Results:**

After 2 months of project implementation and by evaluating the selected measures, there was decrease in the number of prescribing medication errors related to enoxaparin by about 54%, the percent of follow up sheet fulfillment by clinical pharmacist was increased by about 80%, and the money saved from eliminating the improper use of enoxaparin was increased by about 11%.

**Conclusion:**

After implementation of ENOXAPARIN protocol, medication errors related to Enoxaparin prescribing have been decreased although some targets were not achieved yet hence more lectures are needed to increase awareness about ENOXAPARIN protocol for medical staff (doctors, nurses, pharmacists) about their roles and the importance of application. The protocol implementation should be circulated to the other units like intermediate care unit.

**South Egypt Cancer Institute, Assiut University**  
(Project code: EDA-UNI-ONC-146)



**Project Title:** Drug-drug interaction implementation system

**Project Team:** Asmaa A.Ghazaly, Shymaa Hosni, Eslam Mohamed, Mai Mahmoud, Ayat Hammam.

### Problem Statement and Objectives:

We, as a team, have selected the drug-drug interaction implementation project (DDI) to emphasize the clinical pharmacy role in improving the quality of healthcare service among cancer patients. The selection is based on lack of reporting and follow-up or any drug-drug interaction checking system in the hospital inward departments.

The project objectives are implementing and standardizing a new drug-drug interaction reporting (DDI) and follow-up system through increasing the percentage of reporting DDI cases from zero % to 15% per month by June 2022, highlighting the common drugs causing DDI and determine the percentage of serious, closely monitor and minor interactions.

### Methodology:

We have decided to apply the DDI project to paediatric oncology department. Medscape DDI checker is used to screen the medications in each prescription. The DDI form, which is designed by the project team, is filled, and then signed and attached to the patient's prescription. Data collection forms are also designed to sort the prescriptions into normal and ICU care. In addition, the interactions are sorted into serious, monitor closely and minor interactions. The drug data is collected to detect the most common drugs causing interactions in both normal and ICU care.

### Results:

The percentage of reporting DDI cases increased from zero to 45.38, which is differed from the expected percentage (15 %). The project also has achieved its goals by documenting the DDI prescriptions in ICU care, which are 78% of the total ICU prescriptions, while the DDI in normal care prescriptions are 36% of the total normal care ones. In addition, the most common drug causing DDI are voriconazole and dexamethasone in the ICU and normal care respectively. For normal care, the interactions are 2.93% serious, 48.76% monitor closely and 48.32% minor. For ICU care, the interactions are 2.69% serious, 52.36% monitor closely and 44.95 % minor.

### Conclusion:

The implementation of our standardized DDI reporting, classification, and follow-up system is fundamental in reduction of the incidence of DDI adverse effects, which save patient life, increase drug effectiveness, decrease disease complications and unwanted side effects, improve quality of life for cancer patients and save unnecessary therapeutic costs.

**Mansoura Ophthalmic Center-**  
**Mansoura University**  
(Project code: EDA-UNI-ASP-030)



**Project Title:** Rational use of preoperative antibiotic (cephalosporin's) for inpatient indicated for cataract surgery.

**Project Team:** Mona Awad. Abeer El-Sheikh. Safaa Elsayed, Salwa Eldesoukey, Eman Hegab.

**Problem Statement and Objectives:**

Antimicrobial steward ships become absolutely necessary worldwide to keep up with the medical progress to solve problems related to antimicrobial resistance to ensure patient safety, reduce waste of resources and reduce the cost associated with rational use of antibiotics.

**Objective:**

By the end of November 2021, reduction of the percentage of patients receiving preoperative cephalosporin's for cataract surgery by 30%.

**Methodology:**

Using the FOCUSPDCA methodology, Clarify the process using a flow chart and understand the root cause by using the fishbone. Select a solution by using the prioritization method and Pareto chart. Applying meetings, surveys with the staff physicians, and a group on WhatsApp. for direct connection with the senior physicians. Gathering data from IT department, medical records, Statistic department, and Inpatient pharmacy. Evaluation and Monitoring step by applying outcome measure. (Percent of patients receiving preoperative cephalosporin's for cataract surgery, Rate of cephalosporin's consumption by month., and Percent cost reduction).

**Results:**

- By the end of the project, we achieved decreasing in cephalosporin consumption up to 58% which is considered above our target level.
- Cost reduction after applying the project was 58% approximately =about 1500 LE.
- By the end of 2021 we reached zero preoperative doses in cataract surgery.
- Next step is to apply our project on a wider scale to surgeries other than cataract surgery.
- We saved our patients from irrational drug use and saved our center budget.

After about nine months of participating in the EDA initiative antimicrobial program and all the submitted effort and hard work by highly qualified pharmacists to keep up with the latest update. We are grateful to the EDA initiative and our hospital that gave us a chance to participate, achieve our project, and make a difference.

## One Day Surgeries at Nasr City, SMC

(Project code: EDA-MOH-ICU-127)



**Project Title:** Management of Medication Errors of Levofloxacin Ordering

**Project Team:** Nihal Hassan, Sara Abdullah, Aya Samir, Basent Wagih, and Rana Mohamed

**Problem Statement and Objectives:** Many hospitalized patients continue to receive intravenous medications longer than necessary. As levofloxacin oral forms are therapeutically equivalent to the parenteral form, our project is concerned with switching appropriate patients from intravenous to oral to decrease the risk of IV catheter infection, cost, and personnel time and equipment and supply needs. Measuring a patient's laboratory values is critical for diagnosing problems and selecting appropriate doses of many drugs such as levofloxacin that require dosage adjustments based on renal function.

**Objectives:** To decrease the percentage of prescribing errors related to the improper dosage form of levofloxacin in patients tolerating oral route in ICU by 30% and to decrease unadjusted doses of levofloxacin in renal patients by 80% in January 2022.

### Methodology:

This study was performed at One Day Surgeries in Nasr City. We targeted all patients receiving levofloxacin medication including those that tolerate oral intake, and patients with renal impairment. Excluding intubated patients, patients with severe sepsis, and patients unable to tolerate oral medications. We measure the percentage of medication errors in prescribing levofloxacin related to unadjusted dose, wrong drug prescription (inappropriate dosage form), and calculated cost-saving based on the proper use of levofloxacin in the 5 months before and after implementation of the intervention.

### Results:

The average patient's benefits from the oral shift were increased by 42.4% from the pre-intervention to post-intervention period. The average renal patients receiving adjusted dose pre-intervention was 50% and post-intervention was 84.12%. The number of saved levofloxacin vials during the project period was 274 vial and the average cost saving from the proper use of levofloxacin in the 5 months was 53%. The total money-saving during the period of the project was 13260 EGP. The consumption rate of levofloxacin vials per month before implementation was 110 vials and after implementation became 56 vials.

### Conclusion and Recommendations:

Adjusting levofloxacin dose in renal patients and switching to oral forms had potential benefits in patient comfort, safety, and less cost. This model could be applied to other drugs with high oral bioavailability.

**Gastrointestinal Surgery Center, Mansoura University**  
(Project code: EDA-UNI-ICU-115)



**Project Title:** Rational use of Carbapenem in surgical ICU

**Project Team:** Rehab Waheed, Rana Rabie, Dana Abo El-Makarem, Marina Karam, and Naira Shalaby

**Problem Statement and Objectives:**

Carbapenems are beta-lactam antibiotics with broad-spectrum activity against aerobic and anaerobic pathogens. In our center, surgeons use them thoughtlessly due to their effectiveness regardless of antibiotic resistance. Our aim was to minimize medication errors of carbapenems which in turn will decrease antibiotic resistance and save costs.

**Methodology:**

Using FOCUS PDCA methodology the solutions were set. Then, approval to implement clinical pharmacists in surgical ICU was accepted. After that, fliers were prepared for dose and indication of Carbapenemes, and meetings were performed with senior doctors. In September, documentation of our interventions and Medication Errors were started, and follow-up sheets were done. Monthly meetings were done to organize collected data and check results.

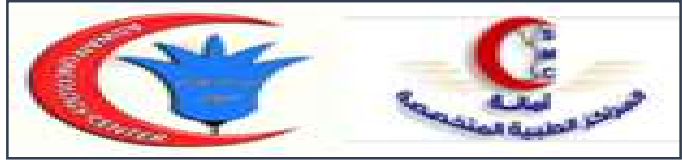
**Results:**

The number of ME (Medication Errors), cost, and compliance to interventions were followed for 6 months and statistical analysis was done. A comparison between before (June, July & August) and after (September, November & December) implementation of clinical pharmacists was done. The number of ME (Medication Errors) was decreased from 33 to 18 which reflects a 45.5% reduction in ME. Moreover, the cost of consumption of carbapenems was reduced from 45,342 to 33,828 LE resulting in a 25.3% reduction in cost. Interventions were accepted by 68% and rejected by 32% which in turn resulted in 4,800 LE savings.

**Conclusion and Recommendations:**

In conclusion, our project results in decreasing ME by 45.5% and the cost of carbapenems consumption by 25.3% as well as 4,800 LE as cost savings. The improvement was observed so we will repeat the PDCA cycle on the expanded scale (Middle ICU & Liver transplantation ICU) after recruiting more clinical pharmacists.

## Aswan Oncology Center (Project code: EDA-MOH-ONC-147)



**Project Title:** Implementation of Hematopoietic Growth Factor Prophylactic Protocol

**Project Team:** Randa Mamdoh, Youstena Alfons, Eman Salah, Shahenda Khaled, Marian Joseph, Yara AbdelRaof .

### Problem Statement and Objectives:

The increase in the number of patients admitted to the hospital with chemotherapy-induced neutropenia, due to absence of hematopoietic growth factor preventive protocol. Our Objective is to optimize hematopoietic growth factor use in patients with chemotherapy-induced neutropenia to decrease their admissions to the hospital through designing & implementing a new protocol for precluding neutropenia, saving the cost of antibiotics & other drugs used to treat neutropenia, and patients will receive their Chemotherapy protocols according to schedule.

### Methodology:

1-We searched for hematopoietic growth factor protocol in different guidelines then designed hematopoietic growth factor prophylactic protocol based on guidelines. 2-Physicians suggested focusing on specific protocols which are (DCF–FOLFORINOX–Gemzar/Taxotere 2ndline –FLOT–ICE for soft tissue sarcoma) then the Pharmaceutical and therapeutic committee accepted and approved the protocol. 3-Physicians applied the protocol in December 2021.

### Results:

Pre-implementation & post-implementation data were collected for comparison & analyzing

- After implementing (GCSF prophylactic protocol) the number of patients admitted to hospital complaining of chemotherapy-induced neutropenia decreased from 33 in November 2021 to 15 in February 2022 decreasing by 45%
- Decrease cost spent on antibiotics & supportive treatments used in treatment of neutropenia as the average cost within three months from 68670LE to 30750LE.

We strongly recommend to add the prophylactic GCSF recommendations to preprinted chemotherapy protocols, Train the medical staff about the implementation of hematopoietic growth factor prophylactic protocol and expand the application of protocol on all high risk & intermediate risk for neutropenia protocols.



## Tanta Cancer Center (Group 3)

(Project code: EDA-MOH-ONC-163)



**Project Title:** Shifting continuous infusion of 5-Fu to Elastomeric Pump

**Project Team:** Ahmed Ezzat, Dalia Mostafa, Rawan Hosam and Mariam Saeed

### Problem Statement and Objectives:

Fluorouracil (5-Fu) is one of the most used drugs in many chemotherapy protocols, in which it may be prescribed to infused over 22 or 24 hours. That will let patients to stay at least 3 days in either the inpatients ward or the daycare unit, and this have a direct impact on both patients' and their relatives' quality of life plus the cost burden on patients and the hospital. We noticed also high percentage of infusion rate errors related to 5-fu infusion. Our objectives were to decrease these infusions errors and the overall cost as low as 20% for a start, beside increasing the quality of life of patients and relatives.

### Methodology:

Our prospective interventional project was conducted from June 2021 to February 2022 on 52 patients diagnosed with G.I.T. (esophageal, gastric and colorectal) related cancers on 22-24 hrs. 5-Fu, recruited from inpatients ward or the daycare unit of Tanta Cancer Center. In our project we trying to shift all the eligible patients to use the elastomeric pumps.

### Results:

There was significant decrease in infusion rate errors percentage after shifting patients to use of elastomeric pumps (80% to 20%) after shifting. There was significant decrease in overall cost on both patients and the hospital after using the elastomeric pumps (1570 L.E. to 870 L.E.). Also, we noticed significant increase in patients' quality of life after shifting (20% to 80%).

### Conclusion:

Our project reveals that patients greatly benefit from using elastomeric pumps as their quality of life increased for them and their relatives, also all problems associated with infusion rate errors are decreased significantly. Also, the project reveals that we need more work and stressing on clarifying and encouraging patients who refused the shifting, to make the decision easier on them to shift to the elastomeric pumps, by making group sessions with patients who tried the pumps to share their positive experience.

## Qena General Hospital (Project code: EDA-MOH-ASP-033)



**Project Title:** Implementation of antimicrobial prophylaxis policy at adult surgery unit.

**Project Team:** Radwa Saad, Rokaia Mostafa, Makarios Samir

### Problem Statement and Objectives:

Due to the absence of an antibiotic treatment protocol in the adult surgery unit, improper antibiotics, especially ceftriaxone instead of cefazoline, have been administered in surgical prophylaxis, which has increased medication errors, and the rate of infections, and the consumption of antibiotics. By the end of November 2021, we aimed to increase adherence to antibiotic prophylaxis policy by 30% for GIT surgeries in the adult surgery unit and decrease the rate of consumption of ceftriaxone (DDD/100 patient-days) in surgery prophylaxis by 30%.

### Methodology:

Obtaining the administrator of the hospital and the head of the surgery department's approval before developing a GIT surgical prophylaxis policy in accordance with the most recent recommendations. Beginning in early October, Cefazoline became available. Doctors were provided lectures on the new policy and encouraged to apply the most recent recommendations about GIT surgical prophylaxis.

### Results:

- In November 2021, roughly 89% of cases fulfilled the first objective and met the correct choice, dose, route, and frequency of medication.
- The estimated cost saving: actual cost reduction/patient 16.21 LE Actual. Expected cost reduction if fully adherent to policy/year 9726 LE.
- Unfortunately, the second objective is not achieved as we hope because of many obstructions especially the shortage of ceftriaxone during the study period.

### Conclusion and Recommendations:

The application of this policy lowers the risk of infection while enhancing patient safety. can affect the reduction of antibiotic resistance and help to reduce costs. Disseminating the improvement and keeping the gain by maintaining these outcomes and continuing to improve policy adherence in addition to rerun the PDCA cycle on a larger scale with more patients is recommended.

## Women Health Hospital (Project code: EDA-UNI-ICU-139)



**Project Title:** Cost Effectiveness Use of Anticoagulants in ICU

**Project Team:** Abeer Abd-Elhady, Amira Yousif, Heba Yassin, Nagham Anwar, Rania Gamal.

### Problem Statement and Objectives:

Venous thromboembolism (VTE) is one of a common complication among ICU patients, so thromboprophylaxis scoring systems are applied as a rapid and relatively simple method for cost reduction, Increase patient safety. Misuse of anticoagulants in ICU patients leads to complication (VTE / bleeding) and excessive consumption.

#### Objectives:

Reduction in both the percent of prescribed medication errors and anticoagulants consumption in ICU by 30 % and reduce the cost of anticoagulants by 20%, at the end of December 202.

### Methodology:

Establish a protocol for thromboprophylaxis by using padua score and RCOG in ICU, detection of patients need thromboprophylaxis, detection of thromboprophylaxis dose according to total score follow up lab results, training of healthcare professionals, collect data and analysis.

### Results:

Physician adherence to the protocol is 50%, We find that anticoagulants consumption reduction percentage is 30%.

### Conclusion and Recommendations:

As we achieve improvement in ICU by adaptation of thrombo-prophylaxis guidelines and achievement of money saving, reducing consumption, patient's safety and satisfaction, we recommend spread the changes by scope expansion to include other departments of our hospital.

## Minya University Hospitals (Project code: EDA-UNI-ONC-156)



**Project Title:** Reducing the time of waiting for patients in oncology department.

**Project Team:** Dalia Mahmoud Abdelatef, Manal Mourice Eskandar, Ghada Mohammed Abdelhakim

**Problem Statement and Objectives:** Reducing the length of staying and waiting is a high priority objective for all health care institutions. Patients receiving chemotherapy need special care including receiving their protocols on time without delay. Patients in oncology department take more time to receive chemotherapy (about 48 hours). We aimed to reduce the time to initiate chemotherapy for patients from 48 hours to 2 hours.

### Methodology:

FOCUS-PDCA were implemented based on identified improvement opportunities. We picked up our project by following the principles and steps of the FOCUS-PDCA methodology which was developed for healthcare industries. The purpose of FOCUS PDCA is to provide a structure that guides the process of problem-solving and process improvements. By using this approach, a comprehensive analysis, response, action plan, and a feedback loop is established to ensure success. We had done protocols and committees, meetings with physicians and nurses and do plan then check. Post action plan data were collected & analysed.

### Results:

There is significant reduction in patients waiting times. The percentage of no. of delayed patients relative to total no. of patients receiving chemotherapy is 75% before protocol then this percentage decreased till reached 28% after applying the protocol within 3 months.

### Conclusion and recommendations:

This process showed significant reduction in waiting time so that increases efficiency of work in oncology department, decreases time consumed, increases satisfaction of patients, medical staff and nurses, decreases hospitalization time and increase turnover (so no. of patients receiving chemotherapy increase from 198 to 300 per month), and this lead to reduce the waste of chemotherapy. This process also showed reduction in cost of hospitalization and medical services for each patient about 320 L.E. in 2 days and this can save about 32000 L.E. for every 100 patients. Safe handling of chemotherapeutic drugs is very important for all members dealing with them. We highly recommend to Repeat PDCA cycle with expanded scope, and apply protocol on the unit of pediatric oncology & hematology.

## Dar El-Salam Cancer Hospital

(Project code: EDA-MOH-ONC-150)



**Project Title:** Decreasing waiting time for outpatients

**Project Team:** Ahmed Abdel-Ghaffar, Asmaa Ibrahim, Heba Abdelbaky, Hoda Mostafa, Remonda Adel, Sally Zakaria.

### Problem Statement and Objectives:

The problem is long waiting periods in the outpatient clinics from the time of examination till the administration of medications more than 1.5 hrs. We aim to decrease waiting time in outpatient clinic to less than 45 min. Increase the satisfaction and improve quality of the life of patients beside the best utilization of resources by good time management, it will lead to the cost minimization of labors and receiving more patients at the same time.

### Methodology:

We use FOCUS PDCA methodology as quality improvement model and get the following steps and solutions:

1. Provide signs and arrow on the floor that help the patients find their ways to the different departments involved in the procedure
2. Relocate the clinical pharmacy to be near the medical clinic in the same floor instead of the previous place in another floor
3. Taking steps in providing a computer system connecting all the departments involved in the procedures (doctors, clinical pharmacy, dispensing pharmacy, accounting, and lab.)

### Results:

After applying the first 2 solutions and tracking for 53 patients from clinical examination till administration of medication in the day care unit, the time was varied with average 1 hr. and 5 minutes versus average of 1 hr. and 50 minutes before the corrective actions and will be more decreasing after implementation of computer system.

### Conclusion and Recommendations:

We recommend for complete all solutions and implement computer system to connect all the departments involved in the procedures (doctors, clinical pharmacy, dispensing pharmacy, accounting, lab.) and more fast and easy interventions from clinical pharmacists beside easier procedures for dispensing and financial steps which will decrease the patient time less than 45 minutes.

## Banha Hospital for Health Insurance Qalyubia Branch (Project code: EDA-MOH-ONC-159)



**Project Title:** Improving pharmacy services provided to oncology patient through establishment of clinical pharmacy unit

**Project Team:** Basma Beshir Ibrahim, Abdelfattah Azab Mohamed, Noha Mohamed Fuad, Manar Ibrahim

### Problem Statement and Objectives:

Clinical pharmacists are responsible for ensuring the safe and effective administration of anti-cancer drugs as members of a multidisciplinary cancer care team. Many problems due to sub-standard health care infrastructure and limited awareness causes long process, high number of medication errors and lack of preparation safety measures that highly affects patient safety and quality of service provided for oncology patients. We aimed to establishment of clinical pharmacy unit for improving pharmacy services provided to oncology patient.

### Methodology:

First we activated permanent file for every patient, regular follow up for patients during taking chemotherapy by physician & clinical pharmacist, activation for protocols & procedures for preparation of chemotherapy and Revision of patient protocols, labs, & doses before taking chemotherapy by clinical pharmacist.

### Results:

The project helped improving overall quality of health care and service offered for patients at the hospital. We Reduced medication errors leading to boosting patient safety by different means.

- Decreased total therapy cost through reducing wastes & increasing cost saving.
- Supported cooperation between medical team by strengthening confidence between clinical pharmacist, physicians, nurses and patient.
- Showed the importance role of clinical pharmacy in improving health care System.

### Conclusion and Recommendations:

Clinical pharmacy services are very important in improving quality and safety use of medicines in oncology practice. Positive feedback of clinicians on clinical pharmacy services was a reflection of acceptance of clinical pharmacy interventions by clinicians. We recommend using pre-printed orders for prescriptions and protocols, making patient follow up card and calculating patient doses by clinical pharmacist at least for overcoming high number of medication errors and lack of preparation safety measures.



**National liver Institute, Menoufia university**  
(Project code: EDA-UNI-ASP-043)



**Project Title:** Antimicrobial Stewardship Program for Rational Use of Carbapenem in Hepatology Department

**Project Team:** Mona Mohamed, Rania Mohamed, Dina Samir, Dina Hassanin, Elshnawy, Yasmin Hisham Abo Elnaser, Hasnaa Shawky Shoman

### **Problem Statement and Objectives:**

Antimicrobial resistance is a worldwide problem. Carbapenem is broad spectrum and highly expensive antibiotics, misuse and overuse increase bacterial resistance to this class. hepatic patients are considered a big challenge as they are immunocompromised patients.

### **Methodology:**

Design a FOCUS PDCA cycle for the project and repeat it in three months: September, October, and November 2021 at the hepatology ward and hepatology critical care unit, beginning with finding problems and healthcare team education in August. Implementation of new carbapenem prescribing policy by clinical pharmacist, then monthly check of results as process and outcome measures.

### **Results:**

Compliance with the new policy was tested by measuring the percentage of culture withdraws before starting antibiotic, which is 76.74% compared to 34.88% before; the percentage of adherence to the Antibiotic Time Out policy, which is 98.5% compared to 14% before; the percentage of adherence to the carbapenem Restriction List, which is 97.5% compared to 25.5% before; and the percentage of antibiotic order form completion, which is 100.0% compared to 46.5% before. The policy outcome is expressed as a percentage cost reduction for carbapenem and total antibiotic consumption, which reduced by 59% and 85.0%, respectively. The cost saving in antibiotic consumption was 13.9 million in a year per 100 patients, measuring the average of carbapenem monthly Defined Daily Dose (DDD)/patient number, which decreased from 93.26 to 36.6 per 100 patients, and increased patient safety by decreasing medication errors occurrence percent by 83.7%.

### **Conclusion and Recommendations:**

Wise use of antibiotics by implementation of antimicrobial stewardship program is an effective solution of antibiotic resistance, clinical pharmacists have important roles in stewardship implementation. which decrease antibiotic resistance, health care cost and increase patient's safety. this project is to be applied in longer durations and different classes of patients.

**Mansoura Pediatric Hospital- Mansoura University**  
(Project code: EDA-UNI-ASP-079)



**Project Title:** Reducing Vancomycin Use in PICU

**Project Team:** Nermin Fawzy, Hanan Abdelghany, Tarek Ellayah, Esraa Elbakhiry, Mohammed Sameh

**Problem Statement and Objectives:**

Antibiotic resistance is a global health problem with high economic and social burden. The Number of antibiotic resistant microorganisms has highly increased in the last years due to misuse of the antibiotics. Vancomycin is a potent anti-bacterial agent that eradicate gram positive bacterial infections but due to its misuse, an emergence of bacterial resistance has been developed. Our aim in the study was to observe the causes of vancomycin resistance and recommend some policies that may decrease the incidence of this problem.

**Methodology:**

Data was obtained before and after implementation of our plan. The number of children prescribed vancomycin was observed during a three months' period. The rate of vancomycin prescribing and the percent of children prescribed vancomycin compared to children admitted to the PICU was calculated. The suitability for starting and stopping vancomycin was observed with regard to the patient laboratory data. The timing of culture obtaining and then the culture results were followed up to assure that the vancomycin use is indicated.

**Results:**

The percent of vancomycin use were 37%, 33%, 27%, 22% among patients admitted to the PICU in July, august, September and November respectively. There was a trend in decreasing the unnecessary use of vancomycin in the unit.

**Conclusions and Recommendations:**

Consensus empirical vancomycin indications successfully and safely reduced vancomycin use in our small scale project in PICU and thus, following the stewardship principles in prescribing and its use will save costs and decrease the incidence of bacterial resistance hence improve the outcomes and patient safety. Antibigram implementation, immediate culture obtaining, serum level monitoring is an urgent recommendation that should be implemented to prevent vancomycin resistance.

## Kafr El-Dawar Central Hospital

(Project code: EDA-MOH-ASP-036)



**Project Title:** Rational Antibiotic Use in Pediatric Ward

**Project Team:** Mona Mohsen El-Dmerdash, Marwa Badwy Elsayeh, Walaa Mahmoud Fyala, Dina Mohamed Elsheikh, Naglaa Mahrous Seif, Reham Mohamed Rashwan and Asmaa Mohamed Abdelhalem

### Problem Statement and Objectives:

A large number of patients in the pediatric ward were exposed to antimicrobial use deviation from recommended practice. Absence of guidelines application was the main motive to target 20% reduction in consumption of the 3 prescribed antimicrobials in the pediatric ward (Vancomycin vial, Cefepime vial, and ampicillin+ sulbactam vial), decrease medication errors related to antimicrobial use, cost reduction, and follow applying the guidelines by the end of December 2021.

### Methodology:

We collected data about types of Diseases treated and proper antibiotic use according to guidelines and started Spreading awareness about proper antibiotic selection and use among staff through lectures and flyers.

- Implementation of Antibiotic policy and treatment protocols for different types of infections with ward physicians.
- Evaluation of the project was done by measuring the decrease in antibiotic consumption, cost, and Percent of antibiotic prescribing errors, before and after the practical application of the clear protocols.

### Results:

For cost reduction we succeeded to decrease it in Cefepime by 88.9% (3314 LE.), ampicillin+ sulbactam by 32%(1034 LE.) and Vancomycin by 38%(724 LE.), with total cost reduction of 58%(5072 LE.) Reduction in consumption of Cefepime 1 gm vials by 76%(211 vials), ampicillin+ sulbactam 750 mg vials by 60%(161 vials) and Vancomycin 500 mg vials by 37%(33 vials)-Decreased antibiotics prescribing errors for inaccurate dose calculation by 40%, incorrect dose interval by 50% and wrong antibiotic selection by 58%.

### Conclusion and Recommendation:

We managed to improve antimicrobial use, optimize infection cure rates, increase safety and minimize harm, side effects, and decrease financial burden. We are working on Sustaining the improvement, continuously monitoring gains, and attempting to save as many antibiotics as reasonable to improve patient care quality.

**Qena Oncology Center**  
(Project code: EDA-MOH-ONC-160)



**Project Title:** Decreasing adverse reactions among patients receiving Geneleukim.

**Project Team:** Cristina Adel, Nehal Abdelbaset, Islam Ahmed, Hanan Aboelmagd, Amira Mansour, Nermeen Anter.

**Problem statement and Objectives:**

Our project aim is how to decrease percent of adverse reactions of Geneleukium. Rational of our project is patient safety and improve quality of life. Problem statement: Increased percent of adverse reactions (back pain, hypersensitivity, and inflammation) among patients receiving Geneleukium. Project objectives are decreasing percent of adverse reactions of Geneleukium (hypersensitivity and back pain) by 8% and (inflammation) by 20% per month by end of December 2021.

**Methodology:**

**1- Setting policy with oncology physicians:**

- Prescribing Geneleukim for all oncology patients.
- In case of repeated adverse effects, patient should be shifted to Zarzio 30 IU.
- P & T committee approved to apply this policy in the hospital.

**2- Nurse training:**

- The hospital manger approved to apply the training program to nursing staff.
- Implement a training program for Geneleukium.

**3- Educational materials by making flyers for Geneleukium and Zarzio for patients and nursing staff.**

**Results:**

Percent of adverse reactions before project was 35% and after project became 11%. Adverse Reactions of Geneleukim decrease after patient education monthly, increase of patient safety, decrease the cost of delaying their chemotherapy treatment. Two patients shifted to Zarzio as repeated adverse reaction of Geneleukim (severe back pain).

**Conclusion and Recommendations:**

Decreasing adverse reactions among patients receiving Geneleukim especially after follow our recommendations such as:

- Patient counseling and education.
- Follow the instructions correctly before administration.
- If adverse reaction event occurred, you should tell the health care team.
- In the case. the adverse effect repeated. Geneleukim must be changed to Zarzio 30 IU.

## Aswan Oncology Center (Project code: EDA-MOH-ASP-008)



**Project Title:** Implementation of Antibiotics Policy for Post-Operative Clean Wound Surgery (Mastectomy and Thyroidectomy) In Aswan Oncology Center.

**Project Team:** Asmaa Awad, Ekram Mohamad, Fatma El-Sayed, Feeby Luka.

### Problem Statement and Objectives:

The global disaster of excessive unnecessary use of antibiotics threatened public health. Accordingly, we addressed the problem of the increased consumption rate of post-operative antibiotics within more than 24 hours after the operation for patients undergoing clean wound surgery without the presence of infection. That will increase the treatment cost for patients and the hospital. We targeted to decrease the consumption rate of cefotaxime by 30% from the baseline for post-operative mastectomy and thyroidectomy by the end of December 2021 after the implementation of the antibiotics policy in a surgical department.

### Methodology:

Using the FOCUS PDCA methodology, we proceeded with our improvement project. During the period from September to December 2021, we prepared a protocol and obtained approval from the antibiotic committee. We trained the medical staff and designed flyers of protocol summary. We measured the quantity and cost of cefotaxime consumed for mastectomy and thyroidectomy patients before and after implementation, and compared the pre and post-project results, considering dividing the number of vials consumed within a month by the number of patients in the same month.

### Results:

The total number of patients included in our project is 145 patients. The average number of vials for each patient: pre-implementation of the project was 4.065 vials, which was declined to 2.39 vials post-implementation. Hence, the consumption rate of cefotaxime vials decreased by 41%, and the average number of vials saved for each patient was approximately 2 vials. Complying with the protocol resulted in saving 2175 EGP in four months. By estimation, cost-saving predicted per year may reach 6525 EGP.

### Conclusion and Recommendations:

Implementation of postoperative antibiotic policy resulted in decreasing the consumption rate of cefotaxime and hence reducing its cost. We recommend standardizing the antimicrobial policy for all surgical operations and following up the compliance.

## Banha Fever Hospital (Project code: EDA-MOH-ASP-011)



**Project Title:** Development of Antibiotic Formulary

**Project Team:** Ahmed Idris Tolba, Doaa Abd Elmoamen, Huda Shaker, Manar Hamdy, Magdah Mohamed

### Problem Statement and Objectives:

It's usual to use two or more three types of antibiotics, but with the deterioration of patient condition & antibiotic resistance, the need for other antibiotics has become, but doctors need to be informed frequently with other available antibiotics dosage, preparation method and storage to ensure the best delivery to patient's health. **Objective:** informing doctors and nurse of all antibiotics available in hospital about their doses, methods of preparation and storage, to ensure that the patient reaches the correct doses, through making a formulary booklet of available antibiotic drugs in addition to preparing training.

### Methodology:

For Development of Antibiotic Formulary begin with collecting most common problem related to Antibiotic through revise patient Sheet Medication & AB Survey. Then Begin with list of available Antibiotics in hospital dilution, stability & Storage Technique. Followed by organizing lectures for medical stuff & Flyers and cards for outpatients.

### Results:

Decrease in consumption of azithromycin in October 2021 in the rate of 69.3% in comparison to Sep 2021 in the rate of 117% in hospital.

- Decrease in consumption of ceftriaxone, Decrease in consumption of vancomycin.
- Decrease in consumption of averozolide, Decrease in consumption of unictam (375 & 1.5gm).
- Cost saving., Increase awareness of Antibiotic proper use and decrease resistance as we can, Improve patient safety.

### Conclusion and Recommendations:

In some cases of pneumonia, Cost / benefit analysis for the implementation of formulary expressed in azithromycin consumption in in-patient's wards, Cost saving monthly approximately = 200 EGP. According Vancomycin, Cost Saving "August" "Oct" = 2803.2 – 1292.1 = 1511.1 Egyptian pounds. AB stewardship program include update formulary annually and latest guidelines, continuous education to healthcare team, patient education, de-escalation of initial empiric AB AND Dose regimen. As a result, decrease medical costs, decrease hospital stay, provide good quality of life and decrease mortality rate.



## Menouf Ophthalmology Hospital (Project code: EDA-MOH-ASP-023)



**Project Title:** Medication Reconciliation in Inpatient Department

**Project Team:** Samia El-Sersy, Yomna Sakr , Norihan Hasan

### Problem Statement and Objectives:

By implementing of Antimicrobial Stewardship Program in our hospital, we focused on cataract surgery because most of our inpatient department is cataract patients. By following up the protocol that was already used in cataract surgery, it was found that using preoperative prophylactic antibiotic topical tobramycin eye drops and postoperative cefotaxime and the patient has been discharged before completion of the full course of treatment and without patient counseling.

And according to the guidelines of cataract surgery, we found that cefotaxime is not indicated in the guidelines, and topical aminoglycoside as tobramycin is it is not a good choice of prophylaxis. But, using preoperative 4th generation fluoroquinolones (Moxifloxacin) eye drops that have broad-spectrum coverage with high penetration of cornea and a high concentration in the cornea to protect against endophthalmitis.

### Objectives:

Reduction of cefotaxime consumption & decrease in the percentage of medication errors related to unconciliated medications in the inpatient department by 20% by the end of October 2021.

### Methodology:

FOCUS PDCA.

### Results:

In this project, we implemented a new cataract surgery protocol and minimized the use of cefotaxime vials as a postoperative antibiotic. As a result, the annual cost savings from the Cefotaxime vial is 11340 L.E. Also, reducing the percentage of medication errors, reducing adverse events through medication reconciliation, and reducing patient harm by providing patient counseling upon discharge.

### Recommendations:

Following the success of our project in the inpatient department, we will continue the process to maintain gains and expand the project to outpatient and then to all departments in our hospital to achieve high patient safety in all hospital departments.

## Theodor Bilharz Research Institute

(Project code: EDA-UNI-ASP-077)



**Project Title:** Implementing of antibiotic sheet in gastroenterology department

**Project Team:** Dina Ezzat Tawfic, Nilly Mohammed Kamel , Hend Soliman Ali.

**Problem Statement and Objectives:** Our project is considered as a first step in applying ASP in our hospital to optimize clinical outcome and minimize unintended consequences of antimicrobial use. We find that the main problem in our hospital is the absence of antibiotic sheet as the physician writes the antibiotic in patient sheet only without clarifying the reason of prescribing the antibiotic or its duration which result in: antibiotic misuse & increasing consumption of certain antibiotic (cefipime)

We start to implement our intervention in gastroenterology dep. & put SMART objective:

Increasing the percentage of adherence of physicians to antibiotic sheet in gastroenterology department by 20% by the end of November 2021.

### Methodology:

Our team starts the action plan at 1/9/2021 by implementing the antibiotic sheet in gastroenterology ward and tested the adherence of physicians to complete antibiotic sheet, then collecting data monthly by counting no. of completed antibiotic sheets & reviewed to evaluate cefipime misuse then divide no. of patients with completed antibiotic sheets/total no. of patients with antibiotic in their sheets. And take the average results of August and July as a baseline.

### Results:

By the end of November, we put 3 measures to be evaluated:

- Process measure: %of adherence of physician to antibiotic sheet
- Which increasing to 16% at November
- Outcome measure: Rate of cefipime consumption (DDD/100patient days)
- Which decrease from 7.8 at Sep. to 6.4 at Nov.
- Outcome measure: Calculating cost reduction %
- Which increase from 6% at Sep. to 40% at Nov.

### Conclusion and Recommendation:

By comparing the result with our smart goal, our team decide to:

- Standardize the process.
- Repeat the pdca cycle in another department.
- And maximizing the patient safety by decreasing antibiotics misuse.

## Al Azhar University Hospital – New Damietta (Project code: EDA-UNI-ASP-004)



**Project Title:** Implementation of antimicrobial protocol in surgery department

**Project Team:** Asmaa Teema, Reham Rizq, Amany Maher, Ahmed ELSukkary

### Problem Statement and Objectives:

We found many problems e.g., lack of antibiogram, misuse of antibiotics, ect. Our objectives were decreasing the consumption of antimicrobials (Imipenem/Cilastatin, Ceftriaxone, Metronidazole, Cefotaxime, Ampicillin/Sulbactam) by 30%, decreasing medication errors by 20% and increasing the awareness of healthcare providers about antimicrobial protocol by 80%, by the end of October 2021.

### Methodology:

First, we calculated DDD/patient days of (Imipenem/Cilastatin, Ceftriaxone, metronidazole, Cefotaxime, Ampicillin/Sulbactam) in July and August. Second, we implemented a protocol based on international antimicrobial guidelines. Third, we conducted a training program for healthcare providers about antibiotic policy. Fourth, we calculated (DDD/Patient days) of the previously mentioned antibiotics, percentage of medication errors and percentage of compliance of physician September to November 2021

### Results:

The consumption rate of imipenem/Cilastatin, and cefotaxime decreased, The consumption rate of Ampicillin/sulbactam, ceftriaxone and metronidazole increased. The physician's compliance was increased by 6%, 18%, 23% in Sep, Oct, and Nov. respectively. Percentage of medication errors decreased by 64%, 49%, 41% in Sep, Oct, and Nov. respectively.

### Conclusion and Recommendations:

Antimicrobial therapy managed by clinical pharmacist give a general improvement in clinical and economic outcomes as it reduces the multidrug resistance, healthcare-associated cost and decrease antimicrobial abuse so the patient will get optimum clinical care based on EBM (Evidence-Based Medicine) Clinical pharmaceutical care can be the right instrument in infectious disease medical team and have a crucial role in improving clinical and economic outcomes in the antimicrobial global management . **And based upon that we recommend:** imipenem/Cilastatin will be prescribed only with a culture of sensitivity furthermore assessment of antibiotic combinations is held to stop the unnecessary medication. We are planning to apply this process to the rest of the hospital.

## Benha University Hospitals (Project code: EDA-UNI-ASP-013)



**Project Title:** Implementation of Antimicrobial Stewardship in ICU.

**Project Team:** Heba Khairy El-Sayed, Hala El-Sayed Mohamed, Heba Mahmoud Ahmed, Rania Mohammed El-Shafeay, Mahetab Sabry

### Problem Statement and Objectives:

Antimicrobial resistance (AMR) is a major public health concerning all around the world causing several critical health challenges such as serious illness progression, high mortality and morbidity and increasing the patient stay, the health care cost and the general community exposure risk to a resistance strain. All of these encouraged us to implement an antimicrobial stewardship program in our hospital starting with ICU to decrease the consumption of broad-spectrum antimicrobial agents. for that, we aimed to decrease consumption of broad-spectrum antibiotic (e.g. carbapenems, cefepime) measured by DDD / 100 patient days at ICU by 10 %, increase doctors' adherence to guidelines by 20% and increase cost saving by 15% by the end of December 2021.

### Methodology:

Our action plan could be summarized into three steps including implementation of antibiotic monitoring sheet, establishing an antimicrobial dispensing protocol and treatment guidelines for different disease in ICU approved by our medication and health board and training the medical staff on the protocols.

### Results:

We achieved consumption reduction percentage for meropenem by 4.6%, eraptenem by 21.6%, imipenem /cilastatin by 16.5% and cefepime by 6.13%. Adherence of physicians to the antimicrobial stewardship guidelines increased by 19.5%.

### Conclusion and Recommendations:

Establishing an antimicrobial stewardship provides the patients with high quality health services with appropriate cost. For that, we recommended to spread the project to other departments.

## Al Zahraa University Hospital (Project code: EDA-UNI-ASP-080)



**Project Title:** Applying Antimicrobial Stewardship Program in Pediatric Unit.

**Project Team:** Niveen M. Abd El Jawad, Mohamed Tarek Mohamed, Shaimaa Omar Abd El Aziz, Nada Salah Labib.

### Problem Statement and Objectives:

Antibiotic misuse is one of the most important factors that can cause antibiotic resistance. Resistance to antibiotics is one of the serious threats to global health which can lead to more serious infections, higher medical costs, prolonged hospital stays, and increased mortality. After the training of ASP with the EDA we finally found the opportunity to make a change in our hospital. Our objective is to apply ASP in Pediatric Unit to decrease misuse of Ampicillin/Sulbactam and Ceftazidime combination, to apply antibiotic form, and detect and decrease medications errors.

### Methodology:

By applying FOCUS PEDCA model, after brainstorming with the team we selected the problem with the polymerization matrix, and clarify and decide on the main problem with the fishbone process. We understood the root cause, and choose the solution with a selection matrix. The action plan was to calculate the percent of antibiotic drug sheet forms implemented, the percent of medication errors, and decrease the consumption of Ampicillin/Sulbactam and Ceftazidime.

### Results:

After applying ASP in the Pediatric Unit, the percentage decrease of medication errors related to uncompleted drug sheet forms was 37%. The Percent of decreasing the consumption of Ampicillin/Sulbactam and Ceftazidime did not get a result within 3 months and we had to extend the duration of this measure for another 6 months to improve the use of antibiotics. These measures helped in improving the misuse of antibiotics in the pediatric ward and improving patients' health and decreasing the patient hospital stay.

### Conclusion and Recommendations:

By using the ASP program and applying it to our hospital, on a small scale in the Pediatric department, we found out that there are lots of errors that need to be corrected. It might take some time for us but it would help in the near future to make a big change in our hospital. We have the tool to make a lot of changes which would make a change in antibiotic use and would make economic and health changes.

## Health Insurance Nasr City Hospital (Project code: EDA-MOH-ASP-057)



**Project Title:** Decrease use of ceftriaxone in surgical ward

**Project Team:** Enas Ahmed Roshdy, Marina Adel Lobos.

### Problem Statement and Objectives:

Using the antimicrobial in preoperative has been increased at our hospital, ceftriaxone is a 3rd generation cephalosporin's that is commonly prescribed due to its low toxicity and high efficacy against a wide range of bacteria. Ceftriaxone was prescribed as a single agent in 10.9 % of the cases where is co-prescribed in 89.1% either with one, two or three antibiotics. Our project aimed to optimize the use of ceftriaxone by establish a policy for surgical prophylaxis to decrease the consumption, resistance of ceftriaxone and to provide the patient safe and effective treatment.

### Methodology:

First, we defining the project to be conducted over 6 months and determining the measures needed to be monitored and calculated. Next, we aimed to start with calculating the consumption of ceftriaxone before the project in the surgical ward, next we started with implementing a policy for prescribing and discontinuation of ceftriaxone. Then the measures listed were documented to be followed up and tracked for instance; defined daily dose per 100 patient days. At the end of the project the reporting and final analysis of the results was conducted.

### Results:

As our hospital converted to isolation hospital due to the pandemic crisis COVID-19, we calculated the measures before and we couldn't proceed on after, so we estimated the results. The consumption is estimated to be decreased by 25% at the end of, the estimated cost reduction is about 28.28 %, the estimated increase in percent of accepted intervention related to ceftriaxone by 40 % and decrease in percent of medication errors related to prescribing of ceftriaxone by 30 %.

### Conclusion and Recommendations:

It has been noted that infections caused by bacteria resistant to specific antibacterial drugs consume more health care resources and are associated with an increased risk of worse clinical outcomes and death. Implementing a policy for prescribing and discontinuation was a good tool to eliminate the abuse of antimicrobials in the surgical ward whereas the ceftriaxone was from the top ten of antibiotic consumption in the hospital. This is a call for development a hospital guideline for disease management and to circulate this project over the whole departments in the hospital which will affect the patient and the hospital



## Cairo University Hospital

(Project code: EDA-UNI-ASP-020)



**Project Title:** Rationalization of Metronidazole Vials Consumed for GIT Surgical Cases

**Project Team:** Rania Hamdy, Basma Ahmed, Hanan Ahmed, Hala Nabil and Mayada Mohamed

### Problem Statement and Objectives:

The pharmacists review the medication sheet for every patient with his labs and cultures and contact the physician if there is a problem. They control the drug duration and check the given doses by nurses. During this review, the pharmacists found that there is a metronidazole misuse. Our project aims to control and rationalize the use of Metronidazole vials in our hospital's GIT surgery department. Project objective: Decreasing the consumption of metronidazole vials in GIT surgery department by 30 % by the end of November 2021.

### Methodology:

We tracked Metronidazole vial consumption for three months beginning in September 2021 and compared it to the three months preceding the project. We collected data weekly and monitored the duration of taking Metronidazole vials for each patient, analysing it to the guidelines and discussing the case with the physician.

### Results:

The results were measured and recorded in a way that linked pre and post data. DDD was computed. Monitoring and controlling the use of metronidazole vials in the GIT surgery department resulted in a 10.4 % decrease in the number of vials dispensed to the department three months. Furthermore, we increased the % of reviewed cases for metronidazole administration by 8.1 %, which was our goal to achieve both patient safety, the cost savings were 1796 L.E.

### Conclusion and Recommendations:

Continue monitoring the drug's use in this department for another three months to confirm the data collected (perform another PDCA cycle), and to expand this trial to other surgery departments in the hospital (expanding scale) and to other departments of different specialties (expanding scope).

## Al-Azhar University Specialized Hospital

(Project code: EDA-UNI-ASP-003)



**Project Title:** Implementation of antibiotic reassessment system (72 hrs. antibiotic time-out form) in medical records.

**Project Team:** Yasmin Mohamed, Marwa Mohamed, Yara Yasser Eslam Fouad, Nahla Adel

### Problem Statement and Objectives:

Our project's goal is to identify interventions to promote better antibiotic stewardship in order to aid in the fight against antimicrobial resistance, Reduce the costs associated with antibiotic overuse and the adverse events associated with unnecessary use. Our goal is to: Increase documentation of the 72-hour antibiotic time-out form in the patient medical record by 70% & Reduce antibiotic (DDD)/100 patient's consumption by 30% by the end of Jan. 2022.

### Methodology:

Implementation of 72 hr antibiotic timeout form in the medical records to be completed by the physicians and inspected by clinical pharmacists this form will help in explaining the indication of antibiotic use, dose, duration, route, culture, and the decision of the physician of continuing use or discontinue or changing to the more sensitive antibiotic. P&T Committee will explain to all heads of the medical department how to use form.

### Results:

Increase Percent of compliance to the 72-hour antibiotic time-out form by 55%

Percent of decreased (DDD) antibiotic consumption before & after antibiotic 72hr timeout form implementation/100 patients is 29.2%

Cost-saving percent after implementation of 72-hour antibiotic time-out form is 64% ~16455 pounds saved.

### Conclusion:

Implementation of 72 hrs. antibiotic timeout form in medical records will help in optimizing antibiotic use. The best available methods for reducing and controlling antibiotic resistance are rational antibiotic use (e.g., appropriate drug selection, dose, and duration of treatment), Clinical guidelines, and regular antibiogram and antibiotic stewardship committee reports may all contribute to more prudent antibiotic use.

## Shebin El Kom Ophthalmology Hospital

(Project code: EDA-MOH-ASP-065)



**Project Title:** Rationalizing Pre and Post Prophylactic Antibiotics Use for Cataract Patients

**Project Team:** Riham Melegy, Lamiaa Dwidar, Reham Sobeeh, Sagy Ashraf, Shorouk Tarek

### Problem Statement and Objectives:

We deal with human beings and their sight. For many of them, there is no second chance, so we must ensure that a high-quality service is delivered the first-time improving vision and quality of life of our patients. While no evidence that Sub-conjunctival gentamycin injection cross to macula we discovered Gentamycin use as Intraoperative prophylaxis in cataract surgery, However the post-cataract end-ophthalmitis rates are still higher than international rates Our objectives were to:

- Avoid Gentamycin retinal toxicity side effects
- Minimize antibiotic resistance
- Minimize complications by implementing a better prophylaxis protocol
- Cost saving

### Methodology:

12 surgeons participated in our Survey on Prophylactic Measures used in cataract surgeries, major of them use Subconjunctival gentamicin Surgeons are divided into 3 groups, group 1 use Subconjunctival gentamycin at end of surgery; group 2 use preoperative moxifloxacin eye drops and intraoperative intracameral Vigamox®, group 3 use no antibiotic prophylaxis. Percentage of post-surgical complications (endophthalmitis)

During the year before our project was %3.5. We record total number of cataract surgeries for each group, follow up complicated cases and relate to the group who did the surgery.

Percentage of post-surgical complications was calculated for each group.

### Results:

Use of gentamycin (Group 1 protocol) had no advantage over the control group (Group 3) as Percentage of post-surgical endophthalmitis was 3.4% and 3.3% respectively while intracameral Vigamox injection (Group 2 protocol) was the most efficient in reduction of post-surgical complications with 1.3% rate. Group 2 protocol achieve 66% decrease in consumption of Vancomycin, ceftazidime & meropenem which is used in endophthalmitis treatment (Cost saving is 3825 LE /patient), decrease patient stays period (20 days' decrease as an average) and improve patient quality of life.

### Conclusion and Recommendations:

- Group 2 physicians should train other physicians on intracameral Vigamox injection
- Stick to pre-surgical topical antibiotic prophylaxis and infection control measures.

## Mit-Ghamr Central Hospital

(Project code: EDA-MOH-ICU-119)



**Project Title:** Reduction of consumption of vancomycin in NICU

**Project Team:** Shimaa Anis Ahmed and Omnia Osama El-Deeb

### Problem Statement and Objectives:

Antimicrobial resistance is an emerging problem around the world nowadays. Misuse of antibiotics leading to wide spread of resistant strains of bacteria. By applying a survey about antibiotic use at NICU, antibiotics were highly prescribed. Vancomycin is a narrow spectrum antibiotic from reserve class according to WHO AWaRe classification. It must be used wisely and according to culture results to avoid resistance. So, our project aiming to rationale its use to improve outcomes. Through reduction of the consumption of vancomycin via DDD of vancomycin/ 100 admissions, plus decreasing the cost of vancomycin used and increasing the adherence of doctors to clinical pharmacist's recommendations through 6 months.

### Methodology:

The action plan started with formulating and organizing an antimicrobial stewardship program team. At first: selecting the measures to be calculated during the project with a visual presenting for the baseline of data collected to the stakeholders. Then we designed an antibiotic preparation and administration procedure. A training program for health care providers was implemented to illustrate their roles and to ensure application of full criteria of vancomycin prescription, preparation, administration and monitoring. Daily clinical round performed for discussing antibiotic prescription. Participation in awareness campaigns and activities was done a report with visualized data prepared for the engaged stakeholders. Ended by analysing and reporting the results.

### Results:

The results revealed that there is a reduction in consumption via DDD / 100 admissions by 57.79 %, a cost reduction by 41 % and an increasing in health care provider's adherence by 18.03%.

### Conclusion and recommendations:

The wise use of antibiotics reduces the total cost and improve the outcomes. Although it will be achieved through a good training and raising awareness that would have a good impact on the compliance of doctors and nurses. The success that has been gained in NICU will encourage the rest departments to follow the stewardship policies and procedures. PDCA cycle will be repeated for another antibiotics and different departments. And it is time for approving the local policies for antibiotics in addition to applying the restricted list of antibiotics according to WHO AWaRe classification and preauthorization sheet to improve the prescription policies.

## Students' Hospital - Cairo University (Project code: EDA-UNI-ASP-021)



**Project Title:** Optimization of monthly consumption rate of selected antibiotics prescribed from Dermatology clinic.

**Project Team:** Haidy Ramadan Arafa Sakr, Amira Kotb Abd El Hamid Elkhateeb, Alyaa Mohamed Essam Eldin Aly, Yasmin Atef Hassanin Alkady, Abrar Khaled Ahmed Refaat

### Problem Statement and Objectives:

Problem was high consumption of antibiotics in outpatient pharmacies. So we aimed dermatology clinic to minimize the mean monthly consumption rate of three of the most prescribed antibiotics in the clinic (Amoxicillin +clavulanic acid 1 g \Clarithromycin 500 mg \Azithromycin 500 mg) by 10% during September to November 2021.

### Methodology:

1. Providing training courses for physicians for updated medical guidelines concerning prescribing antibiotics.
2. Implementing internal policy for prescribing antibiotics in the clinic.
3. Dermatology clinic has to establish a system which specify a certain number of patients per day to be checked.
4. More care for patients medical counselling.

### Results:

Decrease of rate of consumption of our chosen antibiotics which is financially beneficial and of most importance to decrease patient resistance to these types of Antibiotics and decrease side effects from unnecessary use of antibiotics.

Amoxicillin/Clavulanic acid 1g consumption was decreased from 91 tablets as average monthly consumption before project to 28 tablets in November 2021(Decreased by 69.23%) with annual cost decrease from 1190.3 to 356.2 LE. Clarithromycin 500 mg consumption was decreased from 189 tablets as average monthly consumption before project to 42 tablets in November 2021 (Decreased by 77.8 %) with annual cost decrease from 7938 to 1764 LE. Azithromycin 500 mg consumption was decreased from 178 tablets as average monthly consumption before project to 15 tablets in November 2021(Decreased by 91.57 %) with annual cost decrease from 4272 to 360 LE. We have achieved our aim successfully and on time. Results from CHECK phase was monitored every 2 weeks. Our results fulfilled our goal, so we are looking forward to expand our project to other clinics and other antibiotics.

## Obour Specialist Hospital in Suez (Project code: EDA-MOH-ASP-071)



**Project Title:** Optimizing Use of Antibiotics in Pediatrics Outpatient Clinic

**Project Team:** Hend Mahmoud Nasr and Marwa Hamdy Eladl

### Problem Statement and Objectives:

Antibiotic resistance leads to longer hospital stays, higher medical costs, and increased mortality. Thus optimizing the use of antibiotics is essential, therefore we planned to reduce the percent of medication errors related to antibiotic misuse in the pediatric outpatient clinics by 20 % by December 2021.

### Methodology:

We established and updated the antibiotic policies and drug monograph, educate pharmacists on the optimal use of antibiotics, communicate with physicians for better awareness of the rational use of antibiotics, and performed patient counselling. We also discussed with the hospital leaders the increased rate of antibiotics consumption. and the consequences of antibiotics misuse.

### Results:

During the period from August to December 2021, medication errors of azithromycin decreased from 20 % to 9.6 %, amoxicillin / clavulanic from 14 % to 8 %, ampicillin/sulbactam from 11 % to 3.63%, and cefotaxime from 19 % to 7.6 %. The total medication errors percentage of antibiotics use declined by 15 %.

### Conclusions and Recommendation:

Developing antibiotics use policy, providing physicians and pharmacists training and continuous clinical pharmacy audit caused a reduction in medication errors percent within antibiotics. Our recommendation is to expand applying of the antimicrobial stewardship program in all the hospital departments.



**Al-Arish General Hospital.**  
(Directorate of Health Affairs in North Sinai)  
(Project code: EDA-MOH-ASP-026)



**Project Title:** Decreasing the Consumption Rate of Vancomycin in N-ICU.

**Project Team:** Heba Ahmed Soliman, Haya Abdelrahman Elkhaili, Fatma Mohamed, Asmaa Abdelhay, Ahmed Elsaied

### **Problem Statement and Objectives:**

We opted to work in the N-ICU department because infants have a low immune system and require specific attention because their skin layers are less dense than adults' and their internal organs are not yet fully developed, necessitating extra attention. Antibiotic-resistant microorganisms evolve as a result of the use of enhanced generations of antibiotics. Vancomycin-resistant enterococci represent an increasingly important cause of nosocomial infections. Minimizing vancomycin use represents a key strategy in preventing the spread of these infections.

### **Objective:**

By the end of December 2021, decreasing rate of consumption of vancomycin in NICU department by 1/4.

### **Methodology:**

We implement (FOCUS\_PDCA) methodology to detect, display and try to solve the problem of increase the vancomycin consumption in N-ICU.

### **Results:**

After we implemented our plan which was not to dispense antibiotics without doing a blood culture by order from physicians or clinical pharmacy. We decreased the consumption of vancomycin by 50% at the end of November 2021.

Before implementation (in September 2021) the consumption rate of vancomycin was 14 vial used by about 140 neonates (each vial is used for ten neonates). At the end of November 2021 the consumption rate of vancomycin was 7 vials used by about 70 neonates. That's mean we succeeded in stopping the use of the vancomycin for about 70 neonates in just three months. And we are still improving.

### **Conclusion and Recommendation:**

Making blood culture and follow the instruction of IPC is the first line to fight the MDRs an acquired infection in health care facility. So, we recommended to expand the PDCA cycle to include other antibiotics and other department also. Follow the FOCUS-PDCA methodology to analyze and solve the problem of overuse antibiotics, decrease resistance, side effects due to antibiotics and the time of the patient's stay in the hospital, which led to a reduction in the financial cost in the facility. That is a great gain to our work.

## Sohag University Hospital (Project code: EDA-UNI-ASP-070)



**Project Title:** Optimize the usage of carbapenems with patients at post-operative ICU by implementation of Guidelines

**Project Team:** Gasser Mahmoud, Ahmed Badreldin, Asmaa Salah, Asmaa Fouad, Heba Othman, Sara Mohammed

### Problem Statement and Objectives:

Enormous amount of carbapenems consumed every day and still death rate escalating worldwide from bacterial resistance. Despite the decisions and actions taken in the hospital to support and controlling carbapenems use in inpatients and ICU unit, there is overuse of these powerful wide spectrum antibiotics especially meropenem which by the time take-placed other cheap, less wide-spectrum rivals such as cefotaxime, amoxicillin/clavulanic acid...etc. **Our objectives** in this project were to decrease Meropenem consumption which would reflect on the cost in addition to minimizing drug misuse. the post-operative ICU patients are receiving bundle of antibiotics including carbapenems co-administered with other antibiotics, as usage of Carbapenem with no need could increase MDR.

### Methodology:

As a step from our team toward this project, we started early with Quality Unite manager to make coordination QC and IC departments, after that we launched a webinar and training System for medical staff about their roles. Next, we formulated the Guidelines for treatment to be implemented in the ICU, in addition to creating a separate sheet for monitoring the antimicrobial prescribing. Then we assigned a regular follow up and tracking process for antimicrobial use by using a clinical pharmacist sheet. At the end of the plan, we documented and analysed all data reported to obtain results.

### Results:

In spite of a lot of data we have collected in the project, the Laboratory results clarified the most common infection which cause respiratory diseases in ICU, in most cases was Klebsiella pneumoniae, we were enthusiastic to apply Guidelines, our ship is wrecked on the rocks of bureaucracy, because there is no one was opened to change the old-fashioned method of treatment and replace it. The results revealed decreasing in Meropenem consumption by 20 % but to be consider that the number of admissions on Meropenem increased through this stage over than the baseline. Also, the cost of consumed Meropenem decreased by 20% by dependency.

### Conclusion and Recommendation:

We wished to achieve a perfect and splendid result from this project, but it clearly observed we need more time to reach our goals and to change behaviors towards carbapenems use. It would be easy to start with medial departments other than ICU to be more feasible and applicable. So, our plan to continue our project and try to apply it in another department that has more supports from other health care providers.

## Menofia University Students' Hospital (Project code: EDA-UNI-ASP-051)



**Project Title:** Rational use of cephalosporin's in outpatient clinics

**Project Team:** Between El mahmoudy, Rasha Refaat, Heba Abass, Rehab Bassiouny , Rasha Selim

### Problem Statement and Objectives:

Misuse of antimicrobials is a threatening problem that can affect all human worldwide due to development of microbial resistance which is a disaster concomitant with Increase financial cost , so our team tend to search for this and find that there's high rate of consumption of cephalosporin's with wrong indication and duration in our hospital so we decided to put a plan aim to decrease rate of irrational use of cephalosporin's by 30% in outpatient pharmacy and increase awareness by co-ordination with physicians.

### Methodology:

We depend on data collection , first, we clarify the process of cephalosporin's orders in our hospital and understand the root causes of irrational use of cephalosporin's, the main causes were: wrong indications , lack of continuous education programs and cephalosporin's written empirically , we decided to make flyers and to discuss this problem with our physicians and ask them to help us to decrease this irrational use, we make follow up of rate of consumption of cephalosporin's monthly from pharmacy records.

### Results:

Results were so promising we reach approximately more than our target.

Pre intervention phase consumption of cephalosporin's was about 243 unit of cephalosporin's / month, while post intervention phase consumption of cephalosporin's was about 86 unit of cephalosporin's /month, which is more than 30% decrease.

We success to decrease cost from 2542.225 LE to become 1626.95 LE, so is approximately our project profit is approximately 916 LE monthly.

### Recommendations:

So our recommendations are standardization of the process, spread the change to other departments, hold the gains, also to repeat the PDCA cycle with expanded scope or scale. And finally, we conclude that flyers and continuous training and education is highly effective in improving health care services and an easily way to reach of information, also co-operation between clinicians & clinical pharmacists to ensure the physicians are occupied with the necessary information to make evidence-based decisions during each step of health care is highly recommended.

**Elmabara Kafr Eldawar**  
(Project code: EDA-MOH-ICU-109)



**Project Title:** Medication Reconciliation

**Project Team:** Salwa Mohammed emara, Salwa Ali Amin, Nahla Elkorashy, Ghada Ismail Elzokm, Rehab Ibrahim Elghanam, Mariana Rizk ,Donia Salah, Mohammed Shaaban Omar.

**Problem Statement and Objectives:**

Medication reconciliation is the process of comparing a patient's medication orders to all of the medications that the patient has been taking. This reconciliation is done to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions.

**Methodology:**

This prospective 3-month study with pre - and post-design was carried out in ICU settings.

This process comprises five steps:

- (1) develop a list of current medications;
- (2) develop a list of medications to be prescribed;
- (3) compare the medications on the two lists;
- (4) make clinical decisions based on the comparison; and
- (5) communicate the new list to appropriate caregivers and to the patient

**Results:**

We included 50 patients in the Pre-intervention and 300 in the post-intervention phase at ICU admission and 200 at discharge after the best possible medication reconciliation construction based on a medication history of 6 months from the hospital medication information, community pharmacy, and interview with the patient or a representative. The reduction resulted in potential net cost-benefit and medication error.

The number of reconciled medications is 900 drugs all over 3 months

Percent compliance with medication reconciliation increased from 20% to 80%.

**Conclusion and Recommendations:**

According to the check phase, there is improvement observed in the ICU department. Lifesaving decreases the rate of medication errors and cost savings.

Recommend completing the project in the ICU and implementing it in the other units.

Recommend implementing other policies.

## El Gomhorya General Hospital (Project code: EDA-MOH-ICU-100)

مستشفى الجمهورية العام  
قسم الصيدلة الإكلينيكية



**Project Title:** Medication errors in ordering process in ICU

**Project Team:** Heba Swidan, Mayada Salama, Eman Saleh, Salma Tarek, Nadeen Niazy, Amgad Abouelmagd.

### Problem Statement and Objectives:

By Observation during the clinical round that incomplete medication information in the medication sheet in ICU affects dispensing and clinical pharmacy interventions leading to medication errors that affect the patient negatively.

So, by the end of the training, each physician in ICU is able to write complete medication information on a medication sheet by applying the 5 rights rule "right patient, drug, dose, route, time" in ICU which leads to reducing the cost of medications used as corrective action, length of stay, health-care services (nurses, infusion sets, labs), adverse effects.

### Methodology:

By applying FOCUSPDCA we found an opportunity by gathering information from patients' profiles, then we organized a team to investigate who are affected by the problem and assessed the impact after solving the problem.

After data collection, we analyzed the root causes including problems related to personnel, policies, environment, and training programs.

### Results:

Decrease in incomplete medication information forms by 45.43 after training

We measured the impact which is resulted in cost reduction in consumption of solumedrol 1 gm by 29 % & Remdesivir 100 mg by 13.63 %. (Cost reduction (direct cost) includes daily unit dose per patient, length of stay, adverse events, complications, and adjunctive medications).

### Conclusion and Recommendations:

By using the effective achievable matrix, we conclude that training for healthcare providers is the most achievable & effective solution, while recruitment was the least achievable one. Besides, accountability was the second solution to be achieved with low effectiveness.

The final recommendations are to complete the medication information in the ordering process to avoid errors. we confirm using the 5 Rs rule in the ordering process, applying quality control on medication sheet, continuous education, and training programs for new physicians is crucial to standardizing practice, and performing schedule follow up of performance to evaluate the results, these recommendations are to be generalized in other departments.

**Mansoura specialized hospital & Baniebaid  
specialized hospital**  
(Project code: EDA-MOH-ICU-094)



**Project Title:** Management of extravasation of amiodarone.

**Project Team:** Hend Moustafa Mohamed, Soha Abdou Hassan, Eman Mahmoud Ahmed Abdelfattah, Amany Esam Mahmoud Alsaka , Sahar Salah Elsaeed Esmail .

**Problem Statement and Objectives:**

**Our main problem:**

- In ICU patients receiving amiodarone injection in peripheral line with high flow rate, commonly IV related reaction occurs leading to tissue damage & more than 1% to 10% of patients receiving amiodarone injection via central line are exposed to extravasation occurrence leading to tissue erythema and inflammation, which results in an increased length of stay in ICU & cost of patient treatment

**Objectives:**

- by December 2021. Decrease percent of IV -related reaction of amiodarone by 85% in CCU & 100% of nurses will have training on the proper administration of amiodarone in ICU.  
& Decrease length of stay in ICU 60% due to adverse drug events.

**Methodology:**

We apply the FOCUS PDCA methodology to reach the accurate area and find an opportunity for improvement in CCU patients with structural heart disease and atrial fibrillation treated with amiodarone where we complete the FOCUS PDCA steps to decrease adverse drug events by (amiodarone extravasation) to achieve the most benefit for patients & hospital by training nurses, holding seminars for doctors and implementing an amiodarone administration protocol which impact in increasing safety, efficacy and improving quality.

**Results:**

After implementing our project, we saw a decrease in the percent of IV-related reaction cases by 23%, a 66 % reduction in ICU length of stay (one day in ICU costs 800 LE), and a cost reduction of about 4800 LE between July and October (from 7200 LE to 2400 LE).

**Conclusion and Recommendations:**

From improvement achieved in the check phase we act on Standardization of the process to keep on process consistency, continue nurses' education & follow up them and monitor to achieve higher targets, Persistence in Applying amiodarone administration protocol, spreading changes to other departments & hold the gains.



## Al- Menshawy Hospital (Project code: EDA-MOH-ICU-102)



**Project Title:** Decreasing medication errors in hypokalemia management in ICU

**Project Team:** Dalia Sherif Salah El-Din Habib, Eman Ahmed Hamed Bayomi, Ola Elsayed Abd Elnabi Gad

### Problem Statement and Objectives:

Pharmaceutical care projects are an important step to improve patient care and safety. During ICU stay, most patients need intravenous fluid therapy which makes them susceptible to electrolyte abnormalities. Hypokalemia is one of the most common problems encountered in both ICU and CCU patients. The absence of a protocol with a monitoring plan can lead to serious medication errors either over-or under-correction.

Our objectives are to decrease errors in hypokalemia management in ICU patients by 60% within 3 months and to increase adherence to K monitoring in ICU patients by 90% within 3 months. This will lead to improved patient safety and decrease the cost of hospitalization.

### Methodology:

Using the FOCUS-PDCA approach, we identified that the hypokalemia management protocol will be the most efficient way for decreasing errors in hypokalemia management. The project team started with getting approvals from ICU and CCU heads and prepared flyers about the correct management of hypokalemia as well as the correct administration and monitoring of potassium supplements. Hard copies of the flyers were available at ICU and CCU and clinical pharmacists are available during work hours with contact numbers and the WhatsApp group for off-hour questions.

### Results:

The expected results were increased patient safety via appropriate dosing and monitoring of potassium supplements and decreased cost of hospitalization. There were no data collected within the required time frame because our ICU is used for the isolation of COVID-19 patients and no patient met our inclusion criteria due to the different nature of patients.

### Conclusion and Recommendations:

Although no results were obtained during the implementation period, the prepared flyers served as a base for increasing awareness of the importance of a written approved protocol for patient care. The flyers are still effective and are used in the management of hypokalemia patients.

## Al Helal Hospital (Project code: EDA-MOH-ICU-097)



**Project Title:** Optimum Medication Management for Enterally Fed Patients

**Project Team:** Dr Noha Awad, Dr Ameera Mohamed, Dr Mennatallah Ashraf, Dr Mohamed Soliman, Dr Nooran Raafet , Dr Rania Abd Allah , Dr Maha Thabet

### Problem Statement and Objectives:

ICU patients have a variety of medical issues and may require an internal tube for feeding and medication administration. Following up on patients, it was discovered that many medicines are administered incorrectly through the enteral feeding tube.

Our objective is to: Provide an alternate drug or dosage form or route of administration to achieve optimum delivery via enteral feeding tube, eliminate errors during tablet crushing, and maintain medicine efficacy by providing an alternative drug or dosage form or route of administration.

### Methodology:

After a critical analysis of the previous situation in the ICU, we focus on the most common critical problem to solve which appeared to be Inappropriate medication administration via feeding tube. We conducted the root cause analysis for a common problem & its solution. We provided a tablet crusher in ICU, sterile water for dispersing, released medication lists of drugs that shouldn't be crushed, drug alternatives & their interaction with food, and trained pharmacists and nurses.

We measured the percentage of decrease in the number of feeding tube complications before & after implementation of the protocol, percent of accepted recommendations & number of daily patient checklists in ICU.

### Results:

Three months preimplantation one of the major problems was tube occlusion (21%) due to the presence of large particles and absence of suitable tools for crushing, after implementation the percentage become 0%, the major 2nd problem is a high risk of Medication errors due to drug interaction were 52 after implantation the decrease to 5 %.

### Conclusion and Recommendations:

Proper medication management for enterally fed patients can improve patient outcomes and safety.

## Mashtoul El-Souq Hospital

(Project code: EDA-MOH-ICU-116)



**Project Title:** Reducing Medication Errors of LASA and High Alert Medications in ICU

**Project Team:** Doaa Mahmoud Ahmed Moustafa (co-coordinator), Eman Khairy Abdel Hameed, Nashwa Ezzat Mohamed Moselhy, and Amal Hassan Hammad

### Problem Statement and Objectives:

Look-alike and sound-alike (LASA) and high alert medication errors occur in hospitals, and may lead to patient harm, and adverse events and eventually may cause death. Medication errors lengthen hospital stays, and increase inpatient expenses. Our project aims to decrease medication errors due to LASA and high alert medication to 4% by December 2021, and train 100% of staff to handle LASA and high alert medication properly by November 2021, that to ensure patient safety.

### Methodology:

Adopting the FOCUS PDCA model, we stepped up with our project. We planned to avoid abbreviations of medication names, physically separate LASA medications in storage areas, place “Look-Alike, Sound-Alike” auxiliary alerts on medication storage bins, and use tall-man lettering to emphasize differences in medications with sound-alike names. We set rules to minimize the verbal and telephone orders, and use novel dosage delivery devices to distinguish products with similar names. Whenever possible, we planned to determine the purpose of the medication before dispensing or administration.

### Results:

The ME before improvement was 30%, and after improvement, ME decreased to 6%. The project reduced costs associated with adverse events and medication errors and decreased the waste of resources due to events that resulted in harm.

### Conclusion and Recommendations:

Data indicated that medication errors decreased after applying the previously mentioned strategy, which ensured patient safety, decreased hospital stay, and consequently reduced cost. We standardized the process and hold the gain. We recommend spreading the changes in other hospital departments and repeating FOCUS PDCA steps with expanded scope.

**Nasr City Cancer Center (NCCC)**  
Health Insurance Organization (HIO)  
(Project code: EDA-MOH-ONC-157)



**Project Title:** Assessment of The Financial Outcomes of Adopting Dose Rounding Policy for Target Therapy in Nasr City Cancer Center (NCCC): 2021

**Project Team:** Samar Ahmed Ahmed, Heba Abdelmohsen , Nourhan Mohamed shafiey , Sondos Ahmed Hassanin , Shrouk Mohamed Saied , Mohamed El-Sayed Abdel-Aziz Amal Osama Mohammed, Rifqa

**Problem Statement and Objectives:**

Despite its high cost, target therapy was included in the Health Insurance Organization for eligible cancer patients in Egypt. HOPA statement for dose rounding of biological drugs recommends rounding down to the nearest vial within 5% or 10% of the prescribed dose. The primary objective of this study was to assess the financial impact of adopting dose rounding policy of target therapy for eligible cancer patients in Nasr City Cancer Center (NCCC), (Jan-Mar 2021).

**Methodology:**

Based on HOPA statement, we adopted 10 % dose rounding policy for assessing the financial outcomes. Data were collected from the patient sheets (Jan-Mar2021, NCCC). Only sheets containing target therapy were included. Collected data included: Patient Diagnosis, prescribed target therapy, total prescribed drug dose, total dispensed vials, their strength and their unit prices. For each target therapy medication, the patient dose (in nearest vial size) and its corresponding price were estimated before and after 10 % dose rounding policy. The total, highest and lowest cumulative costs for the target therapy were estimated before and after 10 % dose rounding policy. The total cost saving was also estimated. The target therapy with the highest and lowest cost savings were identified. All prices were expressed in Egyptian Pound (EGP).

**Results:**

During the study duration, there were 180 patients with 510 sheets containing target therapy medications. They were Avastin®, Cyramza®, Erbitux®, Mabthera®, Vectibix® and Velcade®. The most commonly diagnosis and prescribed target therapy were breast cancer and Velcade®, respectively. The total cumulative costs before and after 10 % dose rounding policy were 7,233,805 and 6,463,707 EGP, respectively, accounting for 11 % total cost saving. The highest cumulative costs before and after 10 % dose rounding policy were 2,993,705 and 2,856,128 EGP, respectively for Avastin®. The lowest cumulative costs before and after 10 % dose rounding policy were 680,079 and 656,628 EGP, respectively for Mabthera®. The target therapy with the highest cost saving was Velcade® and that with the lowest cost saving was Mabthera®.

**Conclusion and recommendations:**

Implementing the HOPA dose rounding policy for cancer patients will have a positive financial impact as it is more superior in terms of cost savings.

Ain Shams University Hospitals, Oncology  
department  
(Project code: EDA-UNI-ONC-143)



**Project Title:** Lack of patient education in outpatient clinic

**Project Team:** Mai Osama-Lamis Alaa –Aya Samir – Menna Assem--Sara Ahmed--Marian Atef-Christin NaemAmal Osama Mohammed, Rifqa Youssif Adib.

### **Problem Statement and Objectives:**

Although oral chemotherapy agents are less invasive to the standard I.V chemotherapy, they pose many of the same risk as injectable drugs. This drew the attention on the poor education and adherence of the patient to oral medication. As a result, we focused our efforts to improve patient's oral adherence, starting with capecitabine and labatinib.

### **Methodology:**

- (1) Patient education flyers,
- (2) A Survey done for patients receiving both capecitabine and lapatinib before and after receiving the flyers.
- (3) Statistical analysis of the result.

A complete survey was done in the clinic for every patient receiving Capecitabine and labatinib where the patient is given at the end of the survey a flyer describing the patient's dose, frequency, best time for taking the drug, and expected side effects that may occur. The flyers also include ways to prevent the side effect and proper action to be taken if any of the side effects occurs. More over the flyers has images to ease the understanding for the mentioned side effects. At the end another survey was done for the same patients to measure the impact of the flyers on the patient's adherence.

### **Results:**

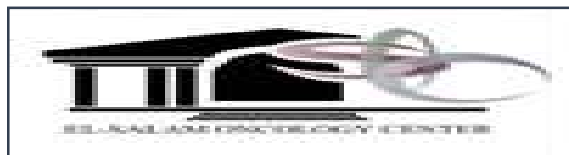
Patient's adherence to capecitabine increased from 47 % to 80% after taking the flyers and increasing patient counseling time. Plus, patient's adherence to lapatinib increased by the same average. Visual images have increased patient's understanding to the side effects of the tablets and the correct way and timing of taking their medication.

### **Conclusion:**

- Our intervention was successfully implemented.
- Written patient counseling improved the patient's quality of life.
- More Flyers are needed in advance for other oral chemotherapy.
- Our project can be generalized to other institutions

## El-Salam Oncology Center / Specialized Medical Centers SMC

(Project code: EDA-MOH-ONC-152)



**Project Title:** Optimize and improve patient compliance and safety of Navelbine, Xeloda, Tykerb & Kisqali

**Project Team:** Wafaa Kassem, Hanan Wahballa, Tamer fathy, AsmaaYousef, AmlMoustafa, HebaFawzy, Amaal Sameh

### Problem Statement and Objectives:

Recently due to Covid 19 crisis and increased need for shifting to oral anticancer drugs, in addition to implementation of the presidential initiative of women health, the number of patients prescribed oral anticancer drugs (Xeloda, Navelbine, Tykerb, Kisqali) have increased significantly which necessitate proper education and follow up to ensure safety and efficacy. Therefore, the objective of this project is to improve Patient compliance who are receiving these anticancer up to 80%.

### Methodology:

The head of the clinical department conducted a weekly meeting to educate and update the pharmacists with the recent guidelines concerning the patient oral chemotherapy to become properly trained to educate the patients using a checklist to ensure all information is given. The team conducted a validated survey to compare between the percentage of compliant patients before and after implementing the educational program. We used an excel spreadsheet to collect and analyze the survey data.

### Results:

Overall Patient percentage in pre-educational stage was 20% while post-educational was 82% which fulfilled the objective of the project. In addition to other data that has been collected which shows the significant impact of the educational program on the patients' knowledge. Such as how to deal with missed dose; pre-education percentage was 24.14% while post-education became 96.5%. And also the knowledge of how to store the medication which was 75.8 % in comparison to 100% after the educational program. Finally, patients' knowledge on when to contact physician was improved from 20.68% to 48.27%.

### Conclusion and Recommendation:

There can be no doubt that patient educational programs are crucial in affecting the efficacy, safety and compliance to the oral chemotherapy medications. That is shown in the improvement achieved in the percentage of compliant patients reaching 82% after implementing the program. In the future, we aim to include more oral chemotherapy medication in the educational program to spread awareness and ensure patient safety and efficacy which is the main goal of any educational program.



## Summary of Pharmaceutical Care Initiative - EDA Initiative Programs:

Summary of Antimicrobial Rational Use Program:	
Through the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), a program on the governance of antimicrobial use was conducted.	
1232 pharmacists from 25 entities and sectors (public and private health institutions plus community pharmacies) were enrolled in this program.	
<b>Executive Manager:</b>	Ghada Ali Younis
<b>Program Director:</b>	Abeer El Behairy
<b>Program Coordinators:</b>	Eman Zakria, Heba Abdul Aziz, Lobna Samy, Nesma atef, Shima Nasr
<b>Instructors:</b>	Abdel Rahman Amin, Adi Al-Nuseirat, Bassim Zayed, Ghada Ali younis, Hagar Elkazaz, Islam Anan, Lobna Samy, Omar Abouelata, Shima Nasr
<b>Management team:</b>	DUPPA members.
<b>The Intended Learning Objectives:</b>	<p><b>By the end of this program, the trainees should be able to:</b></p> <p>Understand AMS, purpose, and the main goals &amp; how to use a practical toolkit to implement ASP.</p> <p>Recognize the different types of measures (qualitative, and quantitative) in antimicrobial stewardship programs.</p> <p>Identify the steps to plan and carry out point prevalence surveys on antimicrobial use in their hospitals. (As well as its structure, and inclusion criteria at different levels).</p> <p>Recognize MDROs and Antimicrobial resistance types (AMR).</p> <p>Define the antibiogram, its importance and uses &amp; how to use interpretation results in intervention and developing clinical practice.</p> <p>Identify the major types of bacteria and drug classes of antibiotics.</p> <p>Identify the antimicrobial spectrum and mechanism of action for each type of antibiotic class.</p> <p>Define therapeutic effects, side effects, and administration routes of major antibiotics.</p> <p>Most common infectious diseases and their management.</p> <p>Manipulate real case studies.</p> <p>Know the purpose and goals of WHO AWaRe Categorization</p>
<b>Content of Program:</b>	Principles of antimicrobial stewardship program & the role of the pharmacist, Principles of antimicrobial therapy and precautions, Multidrug resistance organisms (MDRO) and WHO categorization of antimicrobials according to AWaRe list, Anti-biogram Interpretation for pharmacist, Point prevalence survey (PPS), How to use consumption & use measures (DDD/DOT), Most common infectious diseases guidelines and Economic evaluation of pharmaceutical care projects.

### Implementation:

#### **The program was implemented in 3 phases:**

##### **The qualifying / professional phase (1<sup>st</sup> stage for all participants):**

- 1232 pharmacists of health institutions and public pharmacies were trained in the governance program.
- 250 out of 1232 pharmacists of health institutions were trained on the governance program plus quality for health care program to carry out improvement projects in health institutions.
- 10 lecturers participated in providing this program.
- 27 lectures, workshops, and virtual forums were presented through this program.
- 35 training hours were accredited for this program.

##### **The executive phase (2<sup>nd</sup> stage for pharmacists carrying out improvement projects only):**

- 37 improvement projects were submitted under the Governance of Antimicrobial Use Program

##### **The final phase: (3<sup>rd</sup> stage for pharmacists carrying out improvement projects only):**

The semi-final discussions over two sessions through physical attendance in addition to online attendance resulted in ranking the hospitals in first and second levels, where 15 projects stepped up to the first level and reached the final discussions to compete for the first three winners, 18 projects ascended to the second level and 4 projects to the third level.

The final discussions were held to select the three winners of the first level by a jury comprising a team of experts in various pharmacy disciplines such as the academic staff, professors in the faculties of medicine and pharmacy, WHO representatives, pharmacy, and clinical practitioners over two sessions.

## Summary of Clinical Pharmacy Intensive Care (Adult) Program:

Through the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), a Clinical Pharmacy - was conducted.

1078 pharmacists from 25 entities and sectors (public and private health institutions plus community pharmacies) were enrolled in this program.

<b>Executive Manager:</b>	Ghada Ali Younis.
<b>Program Director:</b>	Heba Abdul Aziz
<b>Program Coordinators:</b>	Abeer El behiry, Eman Zakria, Lobna Samy, Nesma atef, Shimaa Nasr.
<b>Instructors:</b>	Abdel Rahman Amin, Amira Helmy, Ghada Ali younis, Heba Abdul Aziz, Islam Anan, Naglaa Bazan, Sarah Saad, Shimaa Nasr.
<b>Management team:</b>	DUPPA members.
<b>The Intended Learning Objectives:</b>	<p><b>By the end of this program, the trainees should be able to:</b></p> <p>Maintain a good pharmacy practice in ICU.</p> <p>Use different Applications and information resources in the assessment of patients' cases.</p> <p>Identify the main roles of Clinical pharmacists in ICU, in different settings.</p> <p>Manage the Patient's Case with a medication therapy review and Patient care plan.</p> <p>Recognize the important role of patient education in the prevention and treatment of disease.</p> <p>Document and report drug therapy problems and adverse events.</p> <p>Identifying the recent guidelines approaches in the most common diseases.</p> <p>Acquire adequate knowledge &amp; deep understanding of the following:</p> <p>The most common ICU instruments and how to get benefits from it</p> <p>Hemodynamic Parameters</p> <p>Cardiac arrest</p> <p>Glucose control in ICU</p> <p>Stress ulcer prophylaxis</p> <p>VTE prophylaxis</p> <p>Optimize nutrition support</p> <p>Recognize the standardization of clinical pharmacist workflow.</p> <p>Use NO HARMe as a reporting system</p>
<b>Content of Program:</b>	How to manage ICU cases, Workflow & follow-up forms in ICU, Preventive measures in ICU, Fluids & electrolytes management, Stroke and Diabetic Ketoacidosis management, Intro to DTP and ME types, how to use NO HARMe system with data analysis followed with workshops, Economic evaluation of pharmaceutical care projects.

### Implementation:

**The program was implemented in 3 phases:**

**The qualifying / professional phase (1st stage for all participants):**

- 1078 pharmacists of health institutions and public pharmacies were trained in Clinical Pharmacy - Intensive Care (Adult) Program.
- 235 out of 1078 pharmacists of health institutions were trained in Clinical Pharmacy - Intensive Care (adult) program plus quality for health care program to carry out improvement projects in health institutions.
- 8 lecturers participated in providing this program.
- 21 lectures, workshops, and virtual forums were presented through this program.
- 30 training hours were accredited for this program.

**The executive phase (2nd stage for pharmacists carrying out improvement projects only):**

- 28 improvement projects were submitted to the Clinical Pharmacy - Intensive Care for adults Program

**The final phase: (3rd stage for pharmacists carrying out improvement projects only):**

The semi-final discussions over two sessions through physical attendance in addition to online attendance resulted in ranking the hospitals in first and second levels, where 10 projects stepped up to the first level and reached the final discussions to compete for the first three winners, 9 projects ascended to the second level and 9 projects to the third level.

The final discussions were held to select the three winners of the first level by a jury comprising a team of experts in various pharmacy disciplines such as the academic staff, professors in the faculties of medicine and pharmacy, and pharmacy and clinical practitioners over two sessions.

## Summary of Oncology Pharmacy Practice Program

Through the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), a program for pharmaceutical practice program for oncology was conducted.

250 pharmacists from 25 entities and sectors (public and private health institutions plus community pharmacies) were enrolled in this program.

<b>Executive Manager:</b>	Ghada Ali Younis.
<b>Program Director:</b>	Medhat Abdel Hakam.
<b>Program Coordinators:</b>	Amany Al Zeiny, Kholoud Al Naggar, Mona Aboel Soud.
<b>Instructors:</b>	Amany Al Zeiny, Ghada Ali Younis, Heba Anees, Kholoud Al Naggar, Mahmoud Mahrous, Medhat Abdel Hakam, Mohamed Saber, Mona AboelSoud, Noha Boghdady, Shreif Kamal, Yasser Abdel Fatah.
<b>Management Team:</b>	DUPPA members.
<b>The Intended Learning Objectives:</b>	<p><b>By the end of this program, the trainees should be able to:</b></p> <p>Maintain a Good Oncology Pharmacy Distribution process.</p> <p>Raise awareness and build capacity about aseptic technique and other compounding issues</p> <p>Explaining the molecular and cellular basis of cancer initiation and progression.</p> <p>Illustrating how molecular and cellular discoveries have improved cancer treatment using specific examples.</p> <p>Identify the different roles of the oncology pharmacists and how to Identify, assess, and recommend appropriate pharmacotherapy for managing common complications of cancer chemotherapy</p> <p>Recognize the important role of patient education in the prevention and treatment of disease</p> <p>Shedding light on the pivotal role of the Nutritional support of the oncology patients</p> <p>Solve and Deal with real-practice challenges.</p> <p>Identify the general treatment approaches to the most common cancers (Breast cancer, Lung cancer, hematological malignancies, and childhood cancers) and how to overcome their adverse effects.</p> <p>Spreading the knowledge on the meaningful use of biosimilar in oncology.</p>
<b>Content of Program:</b>	Egyptian guide for oncology pharmacy practice, oncology pharmacy services in hospitals and the role of the pharmacist, sterile compounding and safe handling of cytotoxic medications, hallmarks of cancer and their therapeutics, oncology guidelines and DI resources, breast and lung cancer, hematologic and pediatric malignancies, nutritional and supportive care, biosimilar in oncology practice.

### Implementation:

**The program was implemented in 3 phases:**

**The qualifying / professional phase (1<sup>st</sup> stage for all participants):**

- 250 pharmacists of health institutions and public pharmacies were trained in the pharmaceutical practice for the oncology program.
- 126 out of 250 pharmacists of health institutions were trained in the pharmaceutical practice for oncology programs plus quality for health care programs to carry out improvement projects in health institutions.
- 11 lecturers participated in providing this program.
- 37 lectures, workshops, and virtual forums were presented through this program.
- 45 training hours were accredited for this program.

**The executive phase (2<sup>nd</sup> stage for pharmacists carrying out development projects only):**

- 17 improvement projects were submitted under the pharmaceutical practice for the oncology program

**The final phase: (3<sup>rd</sup> stage for pharmacists carrying out improvement projects only):**

The semi-final discussions over two sessions through physical attendance in addition to online attendance resulted in ranking the hospitals in first and second levels, where 14 projects stepped up to the first level and reached the final discussions to compete for the first three winners, 3 projects ascended to the second level and 3 projects to the third level.

The final discussions were held to select the three winners of the first level by a jury comprising a team of experts in various pharmacy disciplines such as the academic staff, professors in the faculties of medicine and pharmacy, WHO representatives, pharmacy, and clinical practitioners over two sessions.



## Summary of Quality Improvement in Pharmaceutical Care Program:

Through the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), a program was conducted.

611 pharmacists from different sectors and communities (public and private health institutions plus community pharmacies) were enrolled in this program.

The program was implemented during which a set of evidence-based lectures and workshops was presented at a weekly rate of 5 weeks for individuals through the zoom meetings to continue the qualifying / professional phase for health institutions' participation only to be able to conduct The executive phase (2nd stage for pharmacists carrying out development projects).

<b>Executive Manager:</b>	Ghada Ali Younis.
<b>Program Director:</b>	Eman Zakria.
<b>Instructors:</b>	Amany Al Zeiny, Nermin Mohi.
<b>Management team:</b>	DUPPA members.
<b>The Intended Learning Objectives:</b>	<p><b>By the end of this program, the trainees should be able to:</b></p> <ul style="list-style-type: none"> <li>Identify dimensions of quality and quality tools.</li> <li>Solve and deal with real-practice challenges and problems.</li> <li>Understand concepts of Structure, Process, Outcome, standard, and standardization.</li> <li>Differentiate between common cause and special cause variation.</li> <li>Identify types of accreditations.</li> <li>Understand types of sampling and data presentation.</li> <li>Illustrate Common principles of improvement models, FOCUS PDCA.</li> <li>Set measures, goals, and objectives.</li> <li>Prioritize areas for improvement and design an improvement project.</li> <li>Implement a full improvement project.</li> </ul> <p><b>The program was provided through:</b></p> <ul style="list-style-type: none"> <li>- 3 lecturers participated in providing this program.</li> <li>- 26 lectures, workshops, and virtual forums were presented through this program.</li> <li>- 30 training hours were accredited for this program.</li> </ul>
<b>Content of Program:</b>	Introduction to quality tools and project selection & design, FOCUS PDCA module, data management, quality standards for oncology pharmacy practice and application.

## Summary of Pharmacy Practice Program:

Through the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), a program was conducted.

270 pharmacists from different sectors and communities (public and private health institutions plus community pharmacies) were enrolled in this program.

The program was implemented during which a set of evidence-based lectures and workshops was presented at a weekly rate of 2 weeks for individuals through the zoom meetings that targeted the newly hired pharmacists in hospitals to develop and qualify them on the proper pharmaceutical and pharmacy practice for providing a safe drug to the patient.

<b>Executive Manager:</b>	Ghada Ali Younis.
<b>Program Director:</b>	Kholoud Al- Naggar
<b>Instructors:</b>	Abeer El Behairy, Ghada Ali Younis, Heba Abdul Aziz, Nermin Mohi, Nermin Sabry.
<b>Management team:</b>	DUPPA members.
<b>The Intended Learning Objectives:</b>	<p><b>By the end of this program, the trainees should be able to:</b>  Understand different areas of practicing pharmacy in hospitals that include:  Practice Management  Medication-Use Policy Development  Optimizing Medication Therapy  Drug Product Procurement and Inventory Management  Preparing, Packaging, and Labeling Medications  Medication Dispensing and Delivery  Monitoring Medication Use  Evaluating the Effectiveness of the Medication-Use System  Evidence-Based Research approach  2. Identify the job descriptions of pharmacists in hospitals.</p> <p><b>The program was provided through:</b>  - 5 lecturers participated in providing this program.  - 10 lectures, workshops, and virtual forums were presented through this program.  - 10 training hours were accredited for this program.</p>
<b>Content of Program:</b>	Hospital-based pharmacy practice, Medication management, and safety, Laws and regulations, DTC overview, Formulary management, ME detection and reporting, Quality standards in pharmacy practice, and tools.

## Summary of Patient Counseling Program:

Through the Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA initiative- 100 Projects), a program on patient counseling principles was conducted.

300 pharmacists from different sectors and communities (public and private health institutions plus community pharmacies) were enrolled in this program.

The program was implemented during which a set of evidence-based lectures and workshops was presented at a weekly rate of 2 weeks for individuals through the zoom meetings to qualify the pharmacists on the proper pharmaceutical and pharmacy practice to provide a safe drug to the patient.

<b>Executive Manager:</b>	Ghada Ali Younis
<b>Program Director:</b>	Lobna Samy
<b>Instructors:</b>	Eman Zakria, Hend Ibrahim, Kholoud Al- Naggat, Sarah Saad
<b>Management team:</b>	DUPPA members
<b>The Intended Learning Objectives:</b>	<p><b>By the end of this program, the trainees should be able to:</b></p> <p>Define patient counseling and understand the principles of counseling.</p> <p>Implement patient counseling in hospitals.</p> <p>Perform patient counseling for most common non-communicable diseases e.g. Diabetes, Hypertension, and use of inhalers in Respiratory diseases.</p> <p>Apply the techniques for the patient counseling process.</p> <p>Create an appropriate environment for confidential communication.</p> <p>Provide the patient with medication-related information.</p> <p>Document education and counseling sessions in patients' permanent medical records.</p> <p><b>The program was provided through:</b></p> <ul style="list-style-type: none"> <li>- 5 lecturers participated in providing this program.</li> <li>- 8 lectures, workshops, and virtual forums were presented through this program.</li> <li>- 10 training hours were accredited for this program.</li> </ul>
<b>Content of Program:</b>	Principles of patient counseling and how to conduct a session, counseling tips for diabetic patients, counseling tips for hypertensive patients, and tips for how to use inhalers.

## Pharmaceutical Care Initiative - Excellent Pharmacy Practice (EDA Initiative -100 Projects), in Arabic

تم تدشين مبادرة الرعاية الصيدلانية – ممارسة دوائية متميزة – 100 مشروع تطويري، في شهر فبراير 2021، وانتهت في يونيه 2022.

### الهدف:

رفع مستوى الممارسة الدوائية والكفاءة المهنية للصيدلة في جميع المؤسسات الصحية بجمهورية مصر العربية بما ينعكس على جودة الخدمات الصيدلانية ويحقق الاستخدام الأمثل والرشيد للدواء ويضمن أمان وسلامة المريض والمبادرة هي منحة مجانية مقدمة لصيدلة مصر من هيئة الدواء المصرية.

### عدد المتقدمين:

9235 صيدلي في البرامج المختلفة.

### عدد المقبولين:

6900 صيدلي في البرامج المختلفة.

### الجهات المشاركة:

خمس وعشرين جهة وقطاع منها المستشفيات الجامعية وأمانة المراكز الطبية المتخصصة وهيئة الرعاية الصحية والهيئة العامة للمستشفيات والمعاهد التعليمية والهيئة العامة للتأمين الصحي والعديد من مديريات الشؤون الصحية بالمحافظات بالإضافة للصيدلة العاملين بالمؤسسات الصحية الخاصة وصيدليات المجتمع.

### البرامج:

ثمانية برامج متنوعة بثمانية دفعات طبقاً للاحتياجات المختلفة في مجالات الرعاية الصيدلانية والبرامج هي:

1. برنامج حوكمة استخدام مضادات الميكروبات.
2. برنامج الصيدلة الإكلينيكية- رعاية مركزة (كبار).
3. جودة الرعاية الصحية - مضادات الميكروبات.
4. جودة الرعاية الصحية - رعاية مركزة.
5. تأهيل الصيدلة المكلفين الجدد للعمل بالمستشفيات.
6. الممارسات الدوائية تخصص أورام.
7. جودة الرعاية الصحية - ممارسات الأورام.
8. التثقيف الدوائي وتوعية المرضى.

## مراحل مبادرة الرعاية الصيدلانية – ممارسة دوائية متميزة – 100 مشروع تطويري:

- أولاً: المرحلة التأهيلية:  
قدمت خلالها المادة التعليمية للممارسات الدوائية السليمة للتخصصات المختلفة استناداً على المرجعيات العالمية وشملت مجموعة من المحاضرات النظرية وورش العمل.
- ثانياً: المرحلة التنفيذية:  
وشملت تخطيط وتطبيق مشروعات تطويرية في مجال الرعاية الصيدلانية لمدة 3 أشهر وذلك للمشاركين من المنشآت الصحية فقط.
- ثالثاً: المرحلة النهائية:  
متابعة العائد المتحقق من تطبيق المشروعات التطويرية في مجال الرعاية الصيدلانية وتقييم واختيار أفضل المشروعات وهذه المرحلة أيضاً خاصة بالمشاركين من المنشآت الصحية.

### التطبيق:

تم إطلاق منصة للمبادرة بالتعاون مع شركة إيفا فارما وهي تفاعلية لتقديم المحاضرات وورش العمل أونلاين وقد تم رفع المواد التعليمية وتسجيلات المحاضرات والتكليفات ورش العمل والإشعارات ونتائج الاختبارات النهائية لكل برنامج على حدة.

يمنح المتدرب طبقاً لطبيعة البرنامج (أفراد / مؤسسات) شهادة اجتياز البرنامج التأهيلي طبقاً لمتطلبات محددة وهي: إتمام الاختبارات المؤهلة والالتزام بحضور محاضرات أونلاين بنسبة لا تقل عن 75 % من أيام التدريب بكل برنامج.

ومن المقرر تكريم جميع المشاركين كمؤسسات ونجحوا في الصعود إلى المستويين الأول والثاني بالإضافة إلى إختيار أفضل مشروعات التطوير في الممارسات الدوائية والصيدلانية بالمنشآت الصحية وسيتم تكريمهم ومنحهم جوائز نقدية.

### إحصائيات ونتائج (لغة الأرقام):

تأهيل صيادلة مصر على الممارسة الدوائية والصيدلانية السليمة والاستخدام الرشيد للدواء من خلال رفع مستوى الأداء الفني للصيادلة لتقديم دواء آمن للمريض.

- عدد المتدربين الفعليين اللذين أتموا البرامج المختلفة: 3791 متدرب.
- عدد المحاضرين والمنسقين: 30.
- عدد المحاضرات وورش العمل والملتقيات الافتراضية: 130 محاضرة/ ورشة عمل.
- عدد الاختبارات: 16 اختبار (قبل بدء البرنامج وبعده).
- عدد الساعات التدريبية: 240 ساعة تدريبية.

- عدد المستشفيات المشاركة في البرامج المؤسسية: 167 مستشفى ومؤسسة صحية.
- عدد القطاعات المشاركة: 25 قطاع/ هيئة.
- عدد المتابعات ومشاهدات المحاضرات على قناة الـ YouTube الخاصة بالمبادرة: 100.000 مشاهدة.
- القيمة المالية المقدرة للمبادرة: 9,429,115 جنيه مصري.
- عدد المشروعات بالمرحلة الأخيرة: 85 مشروع.
- التصفيات قبل النهائية: عدد 6 جلسات من المحكمين بالإدارة العامة للممارسات الدوائية والصيدلانية -هيئة الدواء المصرية.
- جلسات التحكيم النهائي: 6 جلسات.
- عدد المشروعات التي وصلت المستوى الأول: عدد 39 مشروع.
- عدد أعضاء لجان التحكيم فى التصفيات النهائية: 16 محكم.
- عدد المستشفيات التي تم تصعيدها مستوى أول وثاني: 69 مشروع (39 مستوى أول + 30 مستوى ثاني).

### أجريت التصفيات قبل النهائية لعدد:

- 37 مشروعاً ببرنامج حوكمة استخدام مضادات الميكروبات وتم تصعيد 15 مشروعاً بالمستوى الأول.
- 28 مشروعاً ببرنامج الصيدلة الإكلينيكية – رعاية مركزة (كبار) وتم تصعيد 10 مشروعات بالمستوى الأول.
- 20 مشروعاً ببرنامج الممارسة الدوائية تخصص أورام وتم تصعيد 14 مشروعاً بالمستوى الأول.

### المرحلة الختامية:

وصلت المبادرة إلى المرحلة الثالثة والأخيرة وهي التصفيات النهائية للمشروعات المشاركة وتعد من خلال خبراء تحكيم من أعضاء هيئة التدريس بالجامعات والخبراء من الإدارة العامة للممارسات الدوائية والصيدلانية بهيئة الدواء المصرية وذلك للوقوف على أبرز مكتسبات المبادرة وهو التطبيق العملي للمعرفة والتطوير الفعلي لخدمات الرعاية الصيدلانية، وقد أسفرت المناقشات قبل النهائية عن ترتيب المستشفيات في المستويين الأول والثاني كما يلي:

**صعد إلى المستوى الأول فى دفعات مبادرة ممارسة دوائية متميزة -100مشروع للبرامج المؤسسية الثلاث عدد (39 مشروع) ووصل إلى التصفيات النهائية للمنافسة على المراكز الأولى الثلاث بالبرامج المؤسسية كل من:**

#### **أولاً: دفعة برنامج حوكمة استخدام مضادات الميكروبات عدد (15 مشروع):**

صعد من المستشفيات الجامعية مستشفى القصر العيني الفر نسائي - الأطفال الجامعي بالمنصورة - طوارئ جامعة المنصورة - الزقازيق الجامعي - جامعة طنطا - معهد الكبد بالمنوفية - مركز العيون جامعة المنصورة. ومن المراكز الطبية المتخصصة صعدت مستشفى الهلال ومعهد ناصر للبحوث والعلاج ومركز أورام أسوان. ومن الهيئة العامة للرعاية الصحية صعدت مستشفى الكرنك الدولي.



ومن الهيئة العامة للتأمين الصحي صعدت مستشفى مبرة الزقازيق بالشرقية.  
ومن مديريات الشؤون الصحية بالمحافظات المختلفة صعدت مستشفيات قنا العام ومستشفيات كفر الدوار المركزي وكفر الدوار العام بالبحيرة.

#### ■ ثانياً: دفعة برنامج الصيدلة الإكلينيكية – رعاية مركزة (كبار) عدد (10 مشروعات):

صعد من المستشفيات الجامعية مستشفى جامعة قناة السويس التخصصي - الباطنة التخصصي بجامعة المنصورة - صحة المرأة جامعة أسيوط - مركز المنصورة الجامعي لجراحات الجهاز الهضمي - الحسين بجامعة الأزهر.  
ومن المراكز الطبية المتخصصة صعدت مستشفيات شرق المدينة بالإسكندرية - جراحات اليوم الواحد بمدينة نصر - مركز قلب المحلة - مركز أبحاث القلب والكبد بكفر الشيخ.  
ومن الهيئة العامة للرعاية الصحية المجمع الطبي بالإسماعيلية.

#### ■ ثالثاً: دفعة برنامج الممارسات الدوائية تخصص أورام (14 مشروعاً):

صعد من المستشفيات الجامعية كل من مستشفيات جامعة الاسكندرية (علاج الأورام والطب النووي) - معهد أورام جنوب مصر (جامعة أسيوط) - مستشفى المنيا الجامعي - المعهد القومي للأورام (فرع التجمع).  
ومن المراكز الطبية المتخصصة مركز أورام أسوان - مركز علاج الأورام بدمياط - مستشفى أورام دار السلام (هرمل) - مركز أورام قنا - مركز أورام طنطا (المجموعات الأولى والثانية والثالثة) - مركز الأورام بالمنيا.  
ومن الهيئة العامة للتأمين الصحي صعدت مستشفى المجمع الطبي بطنطا ومستشفى بنها النموذجي.

### وصعد إلى المستوى الثاني في دفعات مبادرة ممارسة دوائية متميزة -100 مشروع للبرامج المؤسسية الثلاث عدد (30 مشروع):

#### ■ أولاً : دفعة برنامج حوكمة استخدام مضادات الميكروبات (18 مشروع تطويري):

من المستشفيات الجامعية كل من مستشفى الأزهر الجامعي بدمياط الجديدة - جامعة بنها - أمراض القلب بجامعة أسيوط - الزهراء الجامعي - معهد تيودور بلهارس - جامعة القاهرة - الأزهر التخصصي - الطلبة جامعة القاهرة - جامعة بني سويف - جامعة سوهاج - الطلبة جامعة المنوفية  
ومن الهيئة العامة للتأمين الصحي مستشفى مدينة نصر للتأمين الصحي.  
ومن مديريات الشؤون الصحية بالمحافظات المختلفة صعدت مستشفيات حميات بنها بالقلوبية ورمد منوف - رمد شبين الكوم بالمنوفية - وميت غمر المركزي بالدقهلية - العبور التخصصي بالسويس - بالإضافة إلى مديرية الشؤون الصحية بشمال سيناء.

### ■ **ثانياً : دفعة برنامج الصيدلة الإكلينيكية – رعاية مركزة (كبار) (9 مشروعات):**

صعد من المستشفيات الجامعية مستشفى الراجحي بجامعة أسسوط. ومن المراكز الطبية المتخصصة مستشفيات الهلال - السلام التخصصي - العجوزة النموذجي. ومن مديريات الشئون الصحية بالمحافظات المختلفة صعدت مستشفيات الجمهورية العام بالإسكندرية - المنشاوي العام بالغربية - مشتل السوق المركزي بالشرقية - ميت غمر المركزي والمنصورة التخصصي/ بني عبس بالدقهلية ومن الهيئة العامة للتأمين الصحي صعدت مستشفى مبرة كفر الدوار بالبحيرة.

### ■ **ثالثاً : دفعة برنامج الممارسات الدوائية تخصص أورام (3 مشروعات):**

صعد من المستشفيات الجامعية مستشفيات جامعة عين شمس (قسم علاج الأورام والطب النووي) ومن المراكز الطبية المتخصصة مركز أورام السلام ومن الهيئة العامة للتأمين الصحي مركز أورام مدينة نصر.

عملت المبادرة على تنفيذ مشروعات التحسين حيث استهدفت جودة الرعاية الصحية والصيدلية بنسبة 66% وأمان المريض بنسبة 68% والتوفير في تكلفة العلاج الدوائي نسبة 92%.

وشارك في المشروعات حوالي 500 صيدلي وقام الصيادلة المشاركون بالمشروعات بمتابعة عدد (32335) اثنين وثلاثين ألف مريض بالأقسام الداخلية والسريرية. وتم إصدار عدد من القرارات التنظيمية والسياسات والبروتوكولات للعلاج دوائي وتصميم نماذج تنفيذ ومتابعة العلاج وصلت لعدد تجاوز عدد 500 بالإضافة إلى عقد إجتماعات لجان مختلفة وإصدار القرارات بهدف تنفيذ مشروعات التحسين وقام الصيادلة بالمستشفيات بتقديم عدد 334 محاضرة تعليمية استهدفت عدد 2344 متدرب.

كما أصدر الصيادلة عدد من المجلات العلمية والنشرات التعليمية الدوائية حوالي 468 (فلاير) وعدد من الملصقات 137 (بوستر). وعملت تدخلات الصيادلة على الحد من الأخطاء الدوائية والمشكلات العلاجية بمتوسط نسبة حوالي 45%.

وعلى الجانب الآخر من حيث توفير تكلفة العلاج الدوائي عملت المشروعات المشاركة في مبادرة الرعاية الصيدلية للممارسات الدوائية والصيدلية الأولى على توفير مبالغ مالية تصل إلى ملايين الجنيهات تم حسابها بشكل مباشر خلال فترة التنفيذ فقط (3 أشهر) وهي الفترة التجريبية لتنفيذ المشروعات وقد أفاد دكتور اقتصاديات الدواء بجامعة مصر الدولية والرئيس التنفيذي لشركة أكسيت للأبحاث د. إسلام عنان بأن مبادرة الرعاية الصيدلية – ممارسة دوائية متميزة 100 مشروع تطويري- ليست ذات مردود إكلينيكي على الصحة العامة للمواطن المصري فحسب وإنما لها أيضاً مردود اقتصادي من حيث تحسين كفاءة الصرف وتقليل الفاقد؛ فقد تم عمل دراسة تكميلية بعد انتهاء تقديم المشروعات على ٣٨ مستشفى المشاركة في المبادرة وإرسال استبيانات لحساب التكلفة والعائد الاقتصادي، وتحليل البيانات وحساب خفض التكلفة المباشرة وغير المباشرة الناتجة عن تطبيق المشروعات فقد تم توفير مبلغ ٣٨ مليون جنيهاً مصرياً خلال فترة الثلاث شهور بمتوسط مليون جنيهاً للمشروع الواحد.

وفي حالة تعميم مشروعات التحسين التي تم تجربتها في المستشفيات المشاركة، إذا ما وجدت نفس المشكلات وتمت معالجتها بنفس المنهجية والتطبيق، فيمكن توفير المليارات من ميزانية القطاع الصحي والدوائي بجمهورية مصر العربية.

وتعد مبادرة الرعاية الصيدلانية خطوة هامة من أجل ممارسة احترافية لرعاية المرضى تضمن أعلى الخبرات والتقييم وترشيد استخدام الدواء بالإضافة إلى تقديم أفضل خدمات إدارة دواء. وتأتي انطلاقاً من إيمان هيئة الدواء المصرية بأن تقديم الرعاية الصيدلانية يعد رسالة ومهمة أساسية ويمثل تطويراً هاماً للممارسات الدوائية في المؤسسات الصحية ولرفع المستوى الفني للصيادلة.



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