

LABELKIT XPRESS SYSTEM

PREVENTION OF ERROR RISK IN PHARMACOLOGICAL ADMINISTRATION

KEY OBJECTIVES:

- NO MORE HANDWRITING RELATED RISK
- ALL ADMINISTRATION OPERATIONSDIGITALLY TRACKED
- SIGNIFICANT REDUCTION OF DRUG USE

edited by
WEBBIT SRL





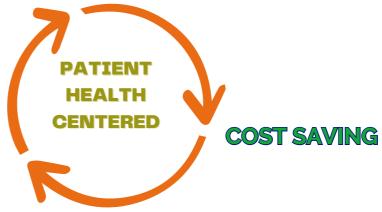
Key Objectives&DescriptionImpact report



LABELKIT XPRESS

Safety enanced from the first label applied!

RISK REDUCTION



LEGAL PROTECTION

DIGITALIZED LABELLING SYSTEM

Unique digital drug identification system enhancing patients' safety and reducing costs associated with errors and litigation FROM FIRST ADMINISTRATION.

WORLD PREMIERE

The UNIQUE drug identification system employed represents the basic change in the way drugs are distributed and used, making it easier and more accurate to digitally track drugs and procedures performed and thus also reducing the risk of errors and waste.

PERFECTED THROUGH OPERATOR USE

Easy to use and rapid operation after years of development and after gaining a great deal of departmental experience in BETA phase together with field operators.

INTERFACEABLE

Can communicate with **HL7** with other hospital systems

HIGHEST STANDARD COMPLIANCE

A 100% compliant system with the highest standards and regulations regarding safety and regulatory authorities To ensure that the system is SOLID and EFFECTIVE

MADE IN ITALY

Continuously growing and supported by Webbit development team

DATABASE

700 medications with dosages and protocols ready to use.

Highly customizable, allows to create and report dangerous drugs, limitations, patient allergies and preparation notes to attach to printout.

MANY PROJECTS ABROAD

In daily use in 5 European countries and in the Middle East, many clinical centres have begun to standardize drug administration using Labelkit Xpress.

PATIENT SAFETY IN HOSPITALS:

The importance of error reduction and innovation in drug administration

The first goal of a hospital is to ensure patient health and safety, providing high-quality care and minimizing the risk of errors.

Errors can have serious **consequences** for patient health and generate significant **costs** for the health care system.

In this section, we will analyze statistics about the cost of medical errors focusing on those associated with **drug administration**.

In addition, we will examine how **Webbit**Company designed and developed the **Labelkit**Xpress System, offering an innovative solution that improves patient safety in drug administration by providing a digital tracking system of all medication administrations performed in the ward.

LABELKIT XPRESS
CONTROLS THE
ULTIMATE ACTION
TO THE PATIENT
BY REDUCING
POSSIBLE ERRORS



Labelkit Xpress controls the ultimate action to the patient: ALL syringes arrive correctly identified to the patient's bedside with all the necessary data (as required by Joint Commission) to avoid errors in medication administration.

Close attention must be paid to error free administration in patient care, as even the smallest syringe error can compromise the effectiveness of care and put the patient's health at risk.

No matter how advanced hospital technologies are, if attention is not paid to the ULTIMATE PATIENT ACTION the whole system IS COMPROMISED.

MEDICAL ERROR COST **STATS**

USA A mirror for Italy

250,000 **DEATHS PER YEAR...**

20.000.000.000 **BILLION DOLLARS PER YEAR!**

between 30% and 50%

Serious medical errors are related to the mistkes in labelling of drugs...

70.000-125.000 errors!

Medical errors are a significant threat to patient safety and also increase the cost of the entire health care system.

According to a study published in the Journal of Patient Safety, medical errors are the third leading

cause of death in the United States. with an estimated 250,000 deaths per year(1).

These errors can range from misdiagnoses to medication errors.

The economic cost of errors is INCREDIBLE.

A 2016 analysis estimated that errors cost about \$20 billion annually in the United States(2).

This figure includes both direct costs, such as additional medical expenses for prolonged hospitalizations in critical areas and indirect costs, probably due to huge legal payouts and to direct hospital costs.

According to the World Health Organization (WHO), between 30% and 50% of serious medical errors are related to drug administration(3).

These errors may occur at various levels of the administration process, from prescription but mostly during the administration of the drug to the patient!

- Footnotes

 1. Makary, M. A., & Daniel, M. (2016). Medical error—the third leading cause of death in the US. British Medical Journal, 353, i2139. https://doi.org/10.1136/bmj.i2139. 2

 2. Shrank, W. H., Rogstad, T. L., & Parekh, N. (2019). Waste in the US Health Care System: Estimated Costs and Potential for Savings. JAMA, 322(15), 1501-1509. https://doi.org/10.1001/jama.2019.13978
- 3. World Health Organization. (2019). Medication Errors: Technical Series on Safer Primary Care Retrieved from https://www.who.int/publications/i/item/medication-errors-technical-series
- safer-primary-care

 4. Institute for Safe Medication Practices. (2020). ISMP List of High-Alert Medications in Acute Care Settings. Retrieved from https://www.ismp.org/recommendations/high-alert-medications-acute

Moreover, the medical fraternity has a reputation for illegible handwriting and carries additional risks related to the legibility of the handwriting itself, the subjective understanding of different handwriting, the possibility of tampering,

and alterability of the handwriting (sometimes even in contact with wet surfaces) and the traceability of the operator.

TYPICAL ERRORS AT SYRINGE APPLICATION POINT

Errors occurring during drug therapy are numerous and of varied.

- Unclear hand-writing or omission of some important data due to hand-written labels
- Data entry times too long causing non delivery of necessary informations for correct administration
- The use of Non-standard abbreviations
- Patient-recipient errors: administering treatment or medications to the wrong patient can lead to complications and, in some cases, can be fatal.
- Non-mention of Type of administrated drug (family to which it belongs)
- Excessive doses of administered drug
- Confusion about the drug preparation
- Frequency of administration
- Known interactions not reported or patient allergies not reported
- Use of high-risk drugs without necessary precautions.
- Drug cocktail, administering a drug in the wrong way or in the wrong dose
- The infusion of multiple drugs in the same parenteral solution with the risk of chemical incompatibility
- · Route of administration error: Administering a drug intravenously instead of orally could cause a serious or even fatal adverse reaction.
- Pump infusion with the wrong rate
- Failure to adjust the drug dosage according to patient's changing circumstances or situation



WORK INTERRUPTIONS ARE PROPORTIONAL TO MEDICAL ERRORS... ERRORS INCREASE EXPONENTIALLY

Interruption rates and errors in critical areas of hospitals such as intensive care units can be significant.

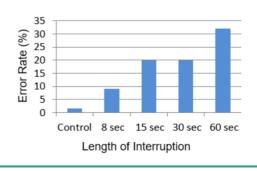
- One study found that, on average, ICU nursing activities are interrupted every 9 to 12 minutes, with an interruption rate of 36 to 43 percent of work time.
- Interruptions can cause errors, distractions and have negative effects on decision making. In one study, 17% of interruptions led to a clinical error.

The most common types of errors are:

- · Administering the wrong drug, the wrong dose, or the wrong route of administration.
- Infusion errors, such as setting the wrong flow of IV fluids or drugs.
- Errors in clinical documentation (caused by being interrupted while completing charts)
- Delays in performing necessary procedures or interventions on patients.
- · Miscommunication among staff

Most interruptions occur due to staff conversations or questions, phone ring tones and alarms, patient monitoring and sudden patient needs.

To reduce the risk of errors, it is FUNDAMENTAL to have visual guidance both on a PC with Xpress System Software and a label that limits the chances of mistakes to ZERO by having all the preparation and destination information of the drug.



Palese A, et al. Interruptions and distractions in health care: results from a European crossectional study. BMJ Qual Saf. 2019;28(9):706-716.

Westbrook JI, et al. Interruptions and task priority processing in the ICU. Intensive Crit Care Nurs. 2011;27(2):71-81.

[•] Miller CA, et al. Characteristics of interruptions occurring during the administration of medication in ICUs. Intensive Crit Care Nurs. 2014;30(3):137-141.
• Tribovich P, et al. Interruptions during medication administration: linguistic and behavioral features. Qual Saf Health Care. 2010;19(3):149-153.

ERRORS HAPPEN LABELKIT XPRESS IS THE SOLUTION

The drug chain system represents one of the weakest points of care, which depends on several factors. Operator deficiencies are not always the main cause of errors, Often the operating environment of hospitals characterized by frequent interruptions, unexpected events and inadequate or absent organization play a relevant role.

In particular, errors in medication administration can cause physical, psychological and economic harm. For example, they can lead to adverse drug reactions, worsening health conditions, longer hospitalisation, and, in some cases, even death. Errors in drug administration can lead to increased health care costs, both for treatment of complications caused by errors and for legal action taken by patients or their families.

In order to identify errors and prevent potential harm that may occur during the drug therapy process, it is necessary to formalize the procedure using specific protocols which are regularly reviewed both for validity and timely implementation.

Using Labelkit Xpress System can ensure efficient management and control of the drug administration process.

Labelkit Xpress is for all aims and purposes an advanced system that promotes proper medication administration through digitization of key actions.

ERROR EXAMPLES

- 1.A patient does not receive the dose of ampicillin at 12.00 because he remains in the X-ray room for three hours (OMISSION ERROR)
- 2. In a crowded Surgery Unit four patients receive the administration e.v. of antibiotic scheduled for 18.00 more than 4 hours late (WRONG TIME ERROR)
- 3.A patient receives total parenteral nutrition by infusion pump at the rate of 200ml/h for the first three hours, instead of 125 ml/h. The infusion rate is corrected at 7.00, when at the beginning of the shift the nurse notices the wrong settings. (WRONG FORM ERROR)
- 4. At 2.00 a hospitalized patient with asthmatic status is prescribed a broncho-dilator (salbutamol) to spray every 4 hours. The nurse does not administer the 6.00 a.m dose because the patient is asleep. (OMISSION ERROR)
- 5.A doctor prescribes oxycodone hydrochloride (oral opioid) and paracetamol for post-operative pain, 1-2 tablets every 4 hours. At 4.00 p,m, the patient presents pain, asks for a tablet and is treated. At 6.30 pm the nurse administers a second tablet at the request of the patient who complains of pain. (EXTRA DOSE
- 6.A patient receives a dose of Digoxin every day at 9.00 a.m. Yesterday digoxinmia was 1.8 (maximum value of the normal range). Today at 6.00 am, the test for the determination of digoxinemia is carried out, but since at 9.00 the value is not yet available, the nurse waits to administer digoxin (OMISSION ERROR)

AN IN-DEPTH STUDY ON INFUSIONS

years 2003, 2005

The most worrying errors arise during use of infusion pumps, which fail despite the technology

of the infusions are administered at an excessive rate

did not have infusion speed specified

13%

infusions have been given to the wrong patient

of infusions have preparation errors

infusion rates differ from those prescribed

patients have been infused with the wrong drug

<sup>V. M. Wu et al., "The use of infusion pumps in the intensive care unit: errors and risks," Anesthesiology, vol. 9g, no. 1, pp. 16-18, 2003.
J. L. Rothschild et al., 'Analysis of Medication-Related Malpractice Claims: Causes, Preventability, and Costs," Archives of Internal Medicine, vol. 164, no. 14, pp. 1567-19.
K. L. Olson et al., "Medication Errors in Pediatric Inpatients: A Study Based on a National Database," Pediatrics, vol. 115, no. 1, pp. 21-27, 2005.
R. M. Kopp et al., "Analysis of medication delivery errors reveals no association with system design features." Critical Care Medicine, vol. 32, no. 9, pp. 1794-1799, 2004.</sup>

The Xpress system has a specific interface for FAST use in critical areas and other departments with a certified and visual database.

The database contains all of the most frequently used drugs and those considered high risk by the Institute for Safe Medication Practices [http://www.ismp.org].

Icons can be added and printed on each label to identify the potential hazard and notes can also be included in the print following the printing of the drug label. These are essential for communication between operator shifts and can contain information on how to deal with the drug in question.

Here some examples:

- Intravenous Amiodarone
- Parenteral Potassium Chloride Concentrate
- Sodium chloride for injection with concentration greater than 0.9%Parenteral Potassium Chloride Concentrate
- Parenteral Potassium Chloride Concentrate
- Injective colchicine
- Low molecular weight Heparin for injection
- Subcutaneous Parenteral Potassium Phosphate
- Intravenous Lidocaine
- Oral Methotrexate for non-oncological use
- Nesiritide
- Sodium nithosside for injection
- Magnesium sulfate for Warfarin injection

ALSO:



- LASA alert and HAM for medication boxes
- COLOR ADD code for colour blind people on each label

LABELKIT IS THE BEST STRATEGY AGAINST ERRORS

YOUR VISUAL GUIDE

Example of drugs by categories (precategorised into official families and into protocols as recommended by SIAARTI, a function of the Xpress system that groups drugs according to properties or destination for a three-step therapy preparation)

- Intravenous adrenergic agonists (e.g. epinephrine)
- General intravenous and inhaled anesthetics (e.g. propofol)
- Intravenous adrenergic antagonists (e.g. proparanolol)
- Neuromuscular blockers (e.g. succinlcholine)
- Chemotherapeutic, oral or parenteral
- Hypersonic dextrose (20% and above)
- Medications to be used intrathecally or epidurally
- Drugs in liposomal form (e.g. amphotericin B liposomal)
- Drugs for intravenous moderate sedation(midazolam)
- Drugs for moderate oral sedation in children (e.g. chloral hydrate)
- Ilb/lla glycoprotein inhibitors (eg. epifibatide)
- Intravenous inotropics (eg. digoxin milrinone)
- Oral hypoglycemic agents
- Intravenous radiological contrast media
- Cardioplegic solutions
- Hemodialysis and peritoneal dialysis solutions
- Total parenteral nutrition solutions
- Intravenous and oral narcotic drugs and opiates (in liquid, concentrated immediate release or delayed release formulations)
- Intravenous thrombolytics and fibrinolytics

USING THE XPRESS SYSTEM FROM DAY ONE...

RISK REDUCTION
95%

HOURS
SAVED BY
OPERATORS DURING
PREPARATION

700 DRUGS AND STANDARD DOSAGES IN DATABASE



Labelkit Xpress System Patent is in the process of being registered: EUROPEAN PATENT no* 19425068.6

The device meets two basic requirements for successful patenting: Innovation and Uniqueness.

Market research, carried out by an external company found no device with the same features as the Labelkit Xpress system in the world.

Professional, high-strength adhesive LABELS for special hospital environments Scratch-resistant, water-resistant, low-temperature (fridge-freezer) and autoclavable 121° rubber cycle for 12 minutes (e.g. for surgical instruments in sterilisation boxes

THE REAL PRODUCT OF THE SYSTEM IS THE LABEL

TYPE OF DILUTION SOLUTION

AUTOMATIC PRINT:
PATIENT NAME, DATE OF BIRTH, ID,
PREPARATION DATE-TIME, EXPIRY DATETIME, OPERATOR ID.

DRUG NAME

DOSAGE: QUANTITY OF DRUG AND DILUTION Methadone
5 mg >>>> 10 ml SF
10.55mg/ml

CONCENTRATION

CHARLTON Harley
18.04.1936 & 83
1D:940C
06.02/20 16:48 21:48
9 web ADA

ROUTE OF ADMINISTRATION

OPERATOR TRACEABILITY: FIRST CHECK: PRESCRIBER SECOND CHECK: OPERATOR COMPLIANCE TO JOINT COMMISSION AND SIAARTI

SOME RELEVANT STUDIES

- 1. Title: "Incidence and types of medication errors in a large academic medical center" (2010) Summary: This study examined medication administration errors in a large academic medical center in the United States. Researchers found that the error rate was 5.7%, with most errors resulting from incorrect dosages and out-of-hours administrations. Bibliography: Rothschild JM, et al. Incidence and types of medication errors in a large academic medical center. JAMA. 2010;293(5):555-563.
- 2. Title: "Medication administration errors: a systematic review" (2018) Summary: This systematic review analyzed several studies on medication administration errors around the world. Researchers found that error rates ranged from 0.6% to 27% depending on the healthcare environment and how data was collected. Bibliography: Keers RN, et al. Medication administration errors: a systematic review. Drug Saf. 2018;41(7): 653-654.
- 3. Title: "Medication errors in nursing homes: a systematic review of the literature" (2014) Summary: This systematic review examined medication administration errors in nursing homes. **The results showed that the average error rate was 21%**, with common errors such as incorrect medication administration or incorrect dosages. Bibliography: Alhawassi TM, et al. Medication errors in nursing homes: a systematic review of the literature. Quality & Safety in Health Care. 2014;23(12):853-861.
- 4. Title: "Medication administration errors in adult patients with cancer: a systematic review" (2019) Summary: This systematic review examined medication administration errors in adult cancer patients. The researchers found an average error rate of 7.5%, with errors often related to problems with communication and incorrect dose administration. Bibliography: Forni A, et al. Medication administration errors in adult patients with cancer: a systematic review. Oncology Nursing Forum. 2019;46(6):E162-E177.
- 5. Title: "Prevalence and economic burden of medication errors in the NHS in England" (2018) Summary: This study examined the incidence and economic burden of medication administration errors in the National Health Service (NHS) in England. The authors estimated that the annual costs associated with medication administration errors in the NHS were around £98.5 million. Bibliography: Elliott RA, et al. Prevalence and economic burden

INITIAL EXPERIENCE OF LABELKIT IN A HOSPITAL

Immediate reward on its debut

Working with the innovative Xpress System

Article published in Minerva Anesthesiologica vol.84 No 10 - October 2018

Dr. Fabio Capuzzi and Dr. Simone Pulvirenti Coordinator Emergency and Urgency Dept, Coordinator Transversal Processes High Technology and Materials S.C.D.U Angesthesia and Resuscitation 1

"Labelkit Xpress Print is an exhaustive identification and drugsupervision system.

.....

A system able to cover the whole area of drugs enhancing patient safety, reducing risks and preventing medical errors.

.....

Satisfies the need for a new cultural and methodological approach that is directed towards patient safety and the safe use of medicine

...

The use of Labelkit Xpress Print presents itself as a regulator of the whole therapeutic process.

.....

The integration of the expertise culture of departmental operators with an innovative, yet easy-to-use system makes it possible to avoid mistakes, waste, partial and/or ineffective interventions'.

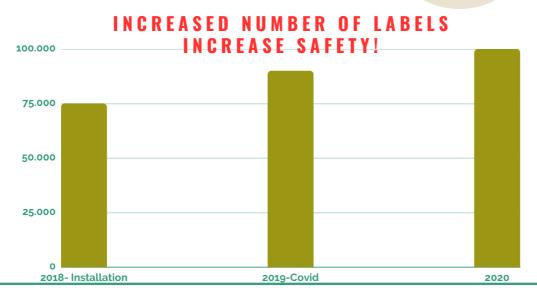
Now with Labelkit Xpress, more than

safe treatments
are carried out
each year!

AT LEAST

5.000

ERRORS AVOIDED EVERY YEAR





LABELKIT XPRESS **SYSTEM**

Italian know-how for Safe Administration!

Medical Labels printed in compliance with Joint Commission International and SIAARTI



ONE SYSTEM IN ONE DEPT. GUARANTEES MINIMUM

80.000

SAFE ADMINISTRATIONS... EVERY YEAR!

*calculated on an annual labels usage of a small ICU

ID:940C ada WEB Data:08/06/18		
FENTanyl 2 μg >>>> 10 ml 0,2μg/ml	HARLEY Charlton 16/04/1936 ID:940C 08/06/18 10/09 # ada WEB	
ATRAcurium 10 mg >>>> 100 ml 0,1mg/ml	HARLEY Charlton 16/04/1936 ID:940C 08/06/18 10:09 // ada.WEB	
Propofol 2 mg >>>> 25 ml 0,08mg/ml	HARLEY Charlton 16/04/1936 ID:940C 08/06/18 10 09 # ada WE8 # ada WEB	
ADREnaline 8 mg >>>> 2 mi 4mg/ml	HARLEY Charlton 16/04/1936 ID:940C 08/06/18 10 09 / ada WEB	

SAFE ADMINISTRATIONS... **EVERY YEAR!**



FASTER PREPARATION, 2 SECONDS PER LABEL



LEGAL PROTECTION FOR OPERATORS AND HOSPITAL



EVERY PRINTED LABEL

CONFORMITY

COMPLIANCE WITH JOINT COMMISSION AND SIAARTI

DRUG DATABASE + 700

READY TO USE DRUG LABELS WITH DOSAGES FOR EACH TYPE OF **DEPARTMENT**

LIME SAVING

350

HOURS SAVED BY OPERATORS IN DRUG PREPARATION

WITHOUT ANY APPROPIATE IDENTIFICATION SYSTEM, THE RISK OF ADMINISTRATION ERROR IS



average error % according to clinical studies

ON AN AVERAGE OF 80,000 ADMINISTRATIONS PER YEAR

12.000

30

1,25

POSSIBLE ERRORS
PER YEAR

POSSIBLE ERRORS
PER DAY

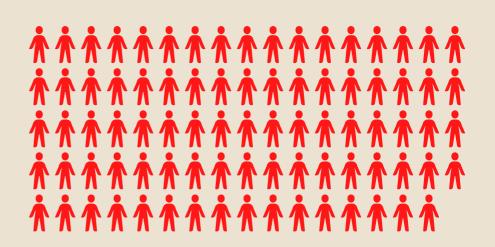
POSSIBLE ERRORS
PER HOUR

0,07%

ARE TO BE CONSIDERED SERIOUS ERRORS

84

PATIENTS REQUIRING ADDITIONAL CARE





1 TO

EXTRA DAYS IN ICU



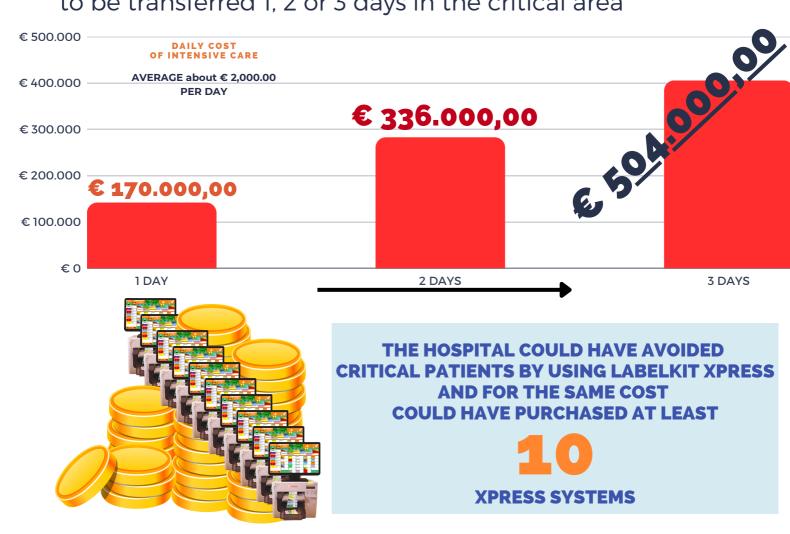
FROM

84 to 252

Additional days of therapy per year!

ANNUAL ERROR COST

Based on the minimum number of CRITICAL patients to be transferred 1, 2 or 3 days in the critical area



"THE COST OF THE
XPRESS SYSTEM
IS FEW EUROS PER DAY
PER PATIENTS...



Patient safety
at the cost of a...XPICS

LABELKIT

OTESS

ITALIAN KNOW-HOW FOR SAFE ADMINISTRATION!

