2SPD-017 RISK IDENTIFICATION IN ANTIDOTE AND EMERGENCY PREPAREDNESS

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Background and Importance Globally, antidote preparedness has been identified as a major challenge (Antoniello et al, 2023). The healthcare system must be able to ensure antidote availability and effective management for both individual poison cases and for mass casualties, whilst weighing in the financial burden. This study recognised a gap in literature on the local situation of emergency preparedness with regards to antidotes and the risks in local antidote availability and accessibility. Identification of risks is crucial for the development of risk management strategies to ensure no disruptions in the antidote supply chain.

Aim and Objectives The aim of this study was to identify risks in the availability and accessibility of antidotes in a small nation.

Material and Methods Vertical audits of eight antidotes (pralidoxime, atropine sulphate 600 mcg/ml injections, hydroxocobalamin kit, sodium thiosulphate, sodium nitrite, digoxin immune fab, activated charcoal and, acetylcysteine) were performed at the procurement unit and two acute general hospitals, to identify risks starting from the sourcing to the dispensing of antidotes for patient use. A clinical expert focus group was established for validation and prioritisation of identified risks.

Results Five of the antidotes were noted to have problematic sourcing due to restricted availability on the open market. Logistics and costs of antidotes had a major influence on antidote availability and accessibility. Other identified risks include inadequate stocking of antidotes, lack of periodic review of procurement specifications, delay of antidote release from quarantine due to regulatory barriers, insufficient training, lack of guidelines and national contingency plan, unreliable suppliers and bureaucratic procurement processes.

Conclusion and Relevance This is the first study of this nature to take place in this small nation. Findings indicate critical need for healthcare system optimisation in emergency preparedness. Risks associated with availability can be mitigated through the establishment of international cooperation agreements at European and global levels. The risks identified will be utilised in the development of guidelines and recommendations on the optimisation of emergency preparedness based on risk management principles.

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Conflict of Interest No conflict of interest.

2SPD-018 IMPACT OF INHALERS ON CO2 EMISSION IN A HEALTH AREA

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Background and Importance There are several types of devices for inhaled therapy, being the most used ones: pressurised metered-dose inhalers (pMDIs), dry-powder inhalers (DPIs) and soft mist inhalers (SMIs). All the types have some environmental impact due to their effect on CO_2 emissions, although very low compared to total CO_2 emissions, pMDIs have proven to exert higher CO_2 emissions than DPIs and SMIs.

Aim and Objectives The main objective is to estimate the impact of pMDIs, DPIs and SMIs, prescribed for any indication, on CO_2 emissions in our health care area during 1 year.

Material and Methods Number of inhalers consumed in our health care area with a population of 550086 inhabitants during 2022 was extracted from the Pharmacy Benefit Management Data.

The inhalers' carbon footprint values were extracted from the publication Montoro et al. The estimated mean value of Kg CO_2-eq/year/pack was 16.69 for pMDIs, 1.02 for DPIs and 0.59 for SMIs.

Results Of the total amount of inhalers consumed during 2022, 39.21% were pMDIs, 54.47% were DPIs and only 6.33% were SMIs.

Considering the estimated correction value, the carbon footprint was 2297846 kg CO_2-eq for pMDIs (91.69% of the total carbon footprint of all the inhalers), 195104 kg CO_2-eq for DPIs (7.79%) and 13105 kg CO_2-eq for SMIs (0.52%).

Conclusion and Relevance The carbon footprint of the pMDIs represented more than 90% of the total carbon footprint of all the inhalers, even when consumption of pMDIs represented less than the 40%. This put in evidence the considerable higher environmental impact of pMDIs compared to DPIs.

However, this does not go in line with several societies and organisms which keep defending that efficacy, safety and patient suitability must continue to be the main factors when choosing a type of inhaler for each patient.

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2SPD-019 TOWARDS A SUSTAINABLE OPERATING ROOM: FEEDBACK ON ACTIONS CARRIED OUT AROUND MEDICAL DEVICES

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Background and Importance Since 2022 within our healthcare establishment, a multi-professional think tank has been engaged in the implementation of a sustainable development approach with three objectives: reduction of the volume of waste, energy saving and fight against pollution in the operating room (OR).

Aim and Objectives Rationalise Medical Device (MD) references and move some defined as uncritical in terms of infectious

risk, sterile single-use double packaging, towards reusable 'resterilisable'. The approach was applied to skin preparation sets, electric and cold scalpel handles.

Material and Methods A working group was created, made up of pharmacists, pharmacy technicians, OR managers, OR nurses, sterilisation and hygiene service. The number of references, quantities ordered, and the annual budget spent in 2022 were evaluated. For the skin preparation sets, an audit among OR nurses was carried out to assess usage practices and to find out if switching to re-sterilisable MDs for the skin preparation stage was possible. The organisational, economic and environmental impact was assessed.

Results In 2022, 15,690 skin preparation sets (€ 70,547), 15,455 single-use electric scalpel handles (€ 24,092) and 12,310 single-use cold scalpel handles (€ 2,050) were used. For the skin preparation sets, two of the three available references include a detersion set. The working group decided to remove them, to reference a double-packaged sponge stick and to integrate re-sterilisable cups into the instrumentation boxes (75% were in favour). An update of the procedures concerning skin preparation for the operation has been carried out. To integrate: one cup, one electric scalpel handle and two cold resterilisable scalpel handles, 684 instrumentation boxes were identified. The cost of purchasing MDs represents an investment of € 27,600. That of sterilisation remains zero since these boxes are already in circulation. Finally, the estimated gain for the BO at the end of the first year is € 43,000, i.e. a reduction in CO2 emissions of 13,545 kg.

Conclusion and Relevance This approach has been validated and has been in place since June 2023 with evaluation planned for the end of 2023. Other actions related to the reduction of waste at the OR are in progress, with a reflection on the double packaging of certain MDs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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2SPD-020 DESIGN AND EVALUATION OF AN INNOVATIVE AIRBORNE TRANSPORT SYSTEM FOR BLOOD-DERIVED DRUGS UNDER EMERGENCY CONDITIONS

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Background and Importance Blood-derived medicines are administered especially in response to traumatic events. Since their use is linked to the occurrence of accidents, their need is unpredictable. Consequently, it is difficult to apply traditional management logic of warehouses.

Aim and Objectives The present research aims to compare different strategies of transporting blood-derived drugs under emergency conditions. Specifically, current land transportation is compared to innovative Electric manned Take-Off and Landing aircrafts (EVTOL) and drones. Different aspects are analysed including safety, as well as cost-effectiveness. Furthermore, the analysis includes the identification of the best location of a possible drug distribution hub within the Piedmont region.

Material and Methods Firstly, an assessment of the safety of air overflight is conducted by constructing a risk map. Each cell contains the probability that a catastrophic failure for the vehicle will lead to a fatal impact with a person. The spatial distribution of population density is obtained from a dataset of 'Meta', while the presence of buildings is estimated using 'OpenStreetMap'. Secondly, Dijkstra's algorithm is used to determine the minimum-risk aerial trajectory; instead, for cars, 'NetworkX' is used.

Results An index of merit is constructed to compare transportation means. The EVTOL is the best means of transportation for making delivery between hospitals in densely populated areas, while the drone does not sufficiently meet the safety requirements. The latter is valid for joining non-densely populated areas. Finally, within the same city and for small distances land transportation is the most suitable. As for the delivery hub, it is strategic to place it in the vicinity of hospital centres where the demand for blood-derived drugs is greatest. Also, it would reduce the major risks correlated to proper medicine storage. For land delivery, it is more suitable outside Turin.

Conclusion and Relevance The study demonstrates that manned EVTOLs are the optimal way of transportation for drug delivery under emergency conditions. At the same time, the drone represents a viable solution if the areas to be flown over are not densely populated, also, they would bring reduction in costs compared to land transportation. The hub location study would represent a significant step forward in connecting hospitals and improving the logistics of drugs administered-as-needed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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3PC-001 TOPICAL COMPOUNDED CLINDAMYCIN SOLUTION MADE FROM ORAL DOSAGE FORMS, CONTROL AND STABILITY STUDY

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Background and Importance Difficulties in drug supply makes pharmacists find alternative ways to provide functional therapy. API from available pharmaceutical forms can be used as a substance for compounding medicine. Drug effectiveness needs be considered as well as compatibility with excipients and primary packing material. Variable temperature, humidity, light can stimulate changes in all pharmaceutical forms, especially in solutions. Primary packing material should provide protection of dosage forms and compatibility with the medicine.

Aim and Objectives Aim of this study was to examine compounding clindamycin topical solution made from available clindamycin hydrochloride oral dosage forms. Effect of excipients and filtration process was evaluated. Drug stability determine not only effectiveness of drug, but also its safety. Patients may store solution in places that may be inadequate. The study compared glass and plastic bottles for storing the solution.

Material and Methods Method for assay determination was HPLC reversed phase with UV detector. Assay and peaks of related substances and impurities were evaluated. Solution was divided in glass and plastic bottles and stored at light exposure, elevated, decreased and room temperature. Sampling was according to free judgment.