detected in this charge variant profile after samples were subjected to 60°C. The charge variants of adalimumab after sample smooth shaking remained unchanged.

Conclusion and relevance Exposure of adalimumab to 60°C modified the chemical structure. The increase in positive charges in the primary structure indicated the increase in basic variants. Therefore, it is highly recommended to keep prefilled syringes refrigerated during transport and storage. On the other hand, agitation of adalimumab solution did not affect the charge variant profiles and thus no particular recommendation is needed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

5PSQ-113 COMPATIBILITY AND STABILITY OF ONDANSETRON AND MIDAZOLAM MIXTURES USED IN PALLIATIVE CARE

[1]M Espinosa Bosch, [2]F Sánchez Rojas*, [2]C Bosch Ojeda. *[1]Hospital Regional Universitario De Málaga, Unidad De Gestión De Farmacia Hospitalaria, Málaga, Spain; [3]University of Málaga, Analytical Chemistry, Málaga, Spain*

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Background and importance Different factors can influence the compatibility and stability of the mixture: drug type, concentration, solvent, container, temperature and light. There are some mixtures of drugs with proven stability, but there is a lack of evidence about the stability and compatibility of the combination of ondansetron and midazolam. The objective of this investigation was to study the compatibility and stability of a binary mixture of these drugs in solution for subcutaneous infusion in palliative care

Aim and objectives To evaluate the compatibility and stability of two admixtures of ondansetron and midazolam at two different temperatures (25°C and 37°C). The concentrations of the admixtures were 0.1 g/L–0.1 g/L and 0.5 g/L–1.0 g/L in NaCl 0.9% stored in elastomeric infusors protected from light

Material and methods Samples were prepared and diluted in NaCl 0.9% in elastomeric infusors in triplicate to obtain four different conditions of concentration and/or storage temperature (0.1 g/L–0.1 g/L; 0.5 g/L–1.0 g/L for ondansetron and midazolam, respectively, stored at temperatures of 25°C and 37°C).

The concentration of each drug was periodically determined using HPLC-UV and UV-Vis spectrophotometry methods in the analytical chemistry laboratory between February and June 2019. Conditions: C_{18} column, mobile phase methanol: $KH_2PO_4$0.05 M, adjusted to pH 3 with H_3PO_3 (60:40, v/v) delivered at a flow rate of 1.0 mL/min. The sample injection volume was 20 µL, and triplicate injections were performed for every sample. The signal was recorded over 14 min and the retention times were 4.1 min for ondansetron and 7.8 min for midazolam. Ondansetron and midazolam concentrations were determined at 254 nm.

Results HPLC-UV and UV-Vis spectrophotometric methods gave the same results. The stability of the admixtures diluted in NaCl 0.9% were as follow: ondansetron–midazolam (0.1 mg/mL–0.1 mg/mL and 0.5 mg/mL –1.0 mg/mL) were stable (retained >90% of their initial concentrations) for only 1 day at 25°C and 37°C, respectively

Conclusion and relevance Recommended use is for a maximum of 1 day, at the concentrations evaluated; over time it tends to precipitate. Infuser conditioning decreases stability with respect to other conditioning materials, so other stability studies may not be extrapolated if stored under different conditions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

5PSQ-114 IMPROVING MEDICATION ADMINISTRATION FOR PATIENTS WITH DYSPHAGIA

[1]J Hosford, [1,2]S Mccarthy, [1]V Silvari*, [3]S Robinson. *[1]Cork University Hospital, Pharmacy Department, Cork, Ireland; [2]University College Cork, School of Pharmacy, Cork, Ireland; [3]Cork University Hospital, Speech and Language Therapy Department, Cork, Ireland*

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Background and importance Dysphagia affects swallowing not only of food and drink, but also of orally administered medications. Altering solid dose formulations renders administration unlicensed and can adversely affect both patient and administrator, depending on the type of drug. Medication administration in patients with dysphagia necessitates a multidisciplinary approach with no one profession holding all the necessary expertise.

Aim and objectives To improve medication administration for patients with dysphagia.

Material and methods

- Baseline audit of practice of medication administration to patients with dysphagia (July/August 2016, n=16).
- Establishment of electronic referral from speech and language therapist (SLT) to pharmacy for patients with dysphagia.
- Assessment of liquid medications using the International Dysphagia Diet Standardisation Initiative (IDDSI) flow test to enable pharmacists and nursing staff to understand if liquid formulation is suitable for the patient's current fluid recommendations as per SLT.
- Policy on medication management in patients with dysphagia written and circulated.
- Ongoing audit of medication administration to patients with dysphagia on wards, and of SLT compliance in completing electronic referral. Audits at 2 months (August 2017, n=14) and at 12 months (August 2018, n=30) post implementation of electronic referral.

Results

- Median percentage of medications being optimally administered increased from 44% to 89% post implementation of electronic referral and viscosity guide for liquid medications.
- 40% of patients needing pharmacy review referred by SLT, but 40% of patients needing referral were only highlighted on the day of the audit.
- Patients were reviewed sooner by pharmacy when electronic referral was completed.

Conclusion and relevance Implementation of SLT electronic referral to pharmacy increased patient safety. The median

number of days from SLT assessment to pharmacy review was 0 for patients referred by SLT to pharmacy, compared with a median of 10 days for those not referred. Median percentage of medications optimally administered was 89% per patient in those referred to pharmacy versus 50% in patients not referred. This project has targeted a number of different areas to highlight and improve administration of medication to patients with dysphagia throughout a large acute hospital. The audit cycle continues with the aim of further improving patient care in this area.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

5PSQ-115 NEAR MISS DISPENSING ERRORS DURING WORKING HOURS IN INPATIENT DISPENSARIES AT A LARGE UK TEACHING HOSPITAL

N Stewart-Kelcher*, L Elliott, L Watson, A Oborne, A Vlassoff. *Guy's and St Thomas' NHS Foundation Trust, Pharmacy, London, UK*

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Background and importance Errors in medication dispensing have potential to harm patients.[1] Up to 2.7% of dispensed medications include errors, although fewer 'near miss' data exist.[2] Near misses are 'a dispensing error detected by the checker before the patient receives the prescription'.[1 2] Audits defined a local near miss rate in 2013. This UK teaching hospital has two automated (acute, specialist) and one non-robotic (paediatric) dispensaries.

Aim and objectives To determine the frequency, time, staff group and harm potential of near misses.

Material and methods A group representing all stakeholders created a data collection tool based on the UK Centre for Pharmacy Postgraduate Education.[3] It recorded type, time and staff group for near misses in three dispensaries (paediatrics, adult acute and adult specialist). Data collection were piloted and then collected in September 2019 over 7 days. Two pharmacists independently rated the likelihood of harm.

Results Near misses totalled 190/8483 (2.24%) items: 1.10% (specialist), 1.41% (paediatrics) and 3.10% (acute) dispensaries (χ^2, $p \leq 0.001$). Most near misses (51, 26.8%) occurred between 5pm and 6pm. Assistant technical officers accounted for the highest proportion of near misses (16.8%, 32) followed by pharmacists (12.1%, 23), technicians (10%, 19), checking technicians (9.5%, 18), preregistration pharmacists (6.8%, 13) and trainee technicians (5.3%, 10): 71.1% (135) of near misses were graded likely to cause patient harm.

Conclusion and relevance Previous audits observed lower near miss rates than those found in 2019. Hurrying to complete work may account for the higher error rate between 5pm and 6 pm. Loss of three senior experienced pharmacists in 2015–2018 in the adult acute dispensary may have affected supervision of newly qualified pharmacists. The specialist dispensary implemented automation of drug selection in 2009, which may account for the 3.9% reduction in near misses. Reporting dispensing near misses may be too time consuming but regular audit may inform areas for improvement.

Abstract 5PSQ-115 Table 1

Year	*Adult specialist (%)*	*Adult acute (%)*	*Paediatrics (%)*	Hospital average (%)
2006	5	0.5	N/A*	0.9
2011	1.3	0.8	N/A*	1.1
2013	1.0	0.5	0.7	0.7
2019	1.1	3.1	1.4	2.2

*Not audited.

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No conflict of interest.

5PSQ-116 SAFER HANDLING OF ORAL HAZARDOUS DRUGS IN HOSPITAL UNITS

P Tejedor Prado*, EA Alvaro Alonso, E Izquierdo García, A Santiago Pérez, A Such Díaz, S Esteban Casado, A Lázaro Cebas, I Cañamares Orbis, C Esteban Alba, I Escobar Rodríguez. *Hospital Universitario Infanta Leonor, Pharmacy, Madrid, Spain*

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Background and importance After the National Institute for Occupational Safety and Health (NIOSH) classified hazardous drugs (HD), it was deemed necessary to make healthcare workers aware of the risks associated with handling HD in their daily work to mitigate these risks.

Aim and objectives To analyse oral HD handling activities to make handling recommendations based on the lowest dust inhalation risk and to ensure the safety of healthcare workers in hospital units.

Material and methods Oral HD were classified into two categories: groups 1 and 2 and group 3 according to NIOSH grouping system. Secondly, oral HD handling activities in hospital units based on their dust inhalation risk to the workers were ranked and decisions were taken accordingly: opening capsules and sachets must be avoided; marketed liquid formulations is strongly preferred; and in their absence, crushing tablets using closed systems is preferred over compounding medications due to shorter administering periods in hospital units. Finally, the above mentioned ranking was followed for every oral HD. If no marketed liquid alternatives were found, research on techniques for crushing and dissolving tablets was conducted. In the absence of crushing techniques, academic research on compounding oral HD was carried out. For the remaining oral HD, information was requested from the manufacturers.

Results A total of 59 active pharmaceutical ingredients (API) from groups 1 and 2 were analysed. Marketed liquid formulations were found for 13 API (abacavir, ciclosporin, crizotinib, phenytoin, megestrol, mycophenolate mofetil, mycophenolic acid, nevirapine, oxcarbazepine, trametinib, tofacitinib, valganciclovir, and zidovudine). Techniques on crushing and dissolving tablets were available for 21 API (abiraterone, axitinib, busulfan, dasatinib, entecavir, enzalutamide, everolimus, exemestane, flutamide, imatinib, letrozole, medroxyprogesterone, melphalan, mercaptopurine, methimazole, methotrexate, mitotane, ponatinib, rasagiline, sorafenib and tamoxifen).

For 13 API (azathioprine, capecitabine, carbamazepine, cyclophosphamide, chlorambucil, etoposide, hydroxyurea,