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## **Errors Observed During the Processes of Medication Preparation and Administration: The Chilean Nursing Student Experience**

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**Purpose:** Medication errors are one of the most commonly observed errors in healthcare (MacFie, Baudouin, & Messer, 2016). Although students learn about pharmacology and medication administration practices during their education, the clinical environment is unpredictable and uncontrolled (Simonsen, Daehlin, Johansson, & Farup, 2014). The purpose of this presentation is to evaluate the medication errors, including number and type, made by Chilean nursing students during the preparation and administration phases within a clinical simulation scenario.

**Methods:** This is a cross-sectional observational study with a convenience sample of nursing students enrolled in a school of nursing at a large Chilean university. The participant work was evaluated during the processes and sub-processes of medication preparation and administration with a validated 21-item observational tool (Dominguez-Cancino, Arias, Caballero, Escudero, 2019) during a complex clinical simulation scenario (Escudero, Ben-Azul, & Dominguez-Cancino, 2018). The demographic variables included age, sex, school year (second, third, or fourth). An accomplishment prevalence for each item and the average risk percentage for the sample were calculated. The analysis was made in STATA, version 12.0. This study was approved by the university ethics committee.

**Results:** The sample included 171 students, with an average age of 23 years, predominately female, from the second, third, and fourth years of the program. During the preparation phase, the processes identified as high risk (<70% accomplishment) included: "check the medication's expiration date" (39%), "handle the syringe without contaminating it" (59%) and "load right dose" (69%). The high risk processes (<70% accomplishment) identified during the administration phase included: "checking allergies" (29%), "verbalize the vascular access is free from phlebitis or extravasation" (51%) and "informed the patient about the medication and its effects" (59%). A difference among nursing students at different years in the program was observed; with only the third-year students successfully accomplishing the process for all the observation items. Our findings challenge some international observations reported in the literature. For example, our common errors are different than the noted omission, time, dose, and incorrect patient (Fathi et al., 2017; Wang et al., 2015). Also, there are few studies that identify the risk areas related to the patient, such as the presence of a known allergy

and providing the patient with medication information (Dedefo, Mitike, & Angamo, 2016; Gnädinger et al., 2017; Leahy, Lavoie, Zurakowski, Baier, & Brustowicz, 2018). Finally, this study considered topics that are not usually analyzed in the literature, such as infections associated with managing the vascular access.

**Conclusion:** Nurse educators should measure student competency completely across the processes related to medication preparation and administration. In addition, the feedback from observational evaluations using a validated instrument can provide opportunities for curricular and course revisions to address identified risks. Finally, tailored remediation to address high risk competencies can be developed to advance students to the minimum acceptable level. Through increased measurement of student competency with validated instruments, nursing programs can decrease the likelihood of consequential medication errors in clinical practice.

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**Title:**

Errors Observed During the Processes of Medication Preparation and Administration: The Chilean Nursing Student Experience

**Keywords:**

Medication errors, nursing students and simulation

**Abstract Summary:**

The purpose of this presentation is to discuss the medication errors made by Chilean nursing students during the preparation and administration processes within a complex clinical simulation scenario. The relationship between the number and types of errors within each process and the associated sub-processes are evaluated.

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#### First Primary Presenting Author

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**Author Summary:** Prof. Karen Domínguez is a researcher at the Universidad Norbert Wiener and the deputy director at Evidence-Based Health Care South America: A Joanna Briggs Institute Affiliated Group. She has developed a successful line of research focused on interprofessional collaboration. With a strong background in statistics, Prof. Dominguez works as a methodological expert on multi-center research projects in South America. Prof. Dominguez has numerous publications and international conference presentations.

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**Any relevant financial relationships?** Yes

Relationship	Description of Potential Conflict
Currently works at Laerdal Medical	I was not employed by Laerdal at the time this research was conducted. The research simulation center used Laerdal products and equipment.

Signed on 12/04/2019 by *Karen Vergara-Arias*

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Dean Escudero is the past president of the Chilean Society for Clinical Simulation, and a current member of the board of directors for the Society for Simulation in Healthcare.