

transmission clusters will be helpful to determine whether discontinuation of contact precautions led to MRSA transmission in this facility in the period after discontinuation of contact precautions.

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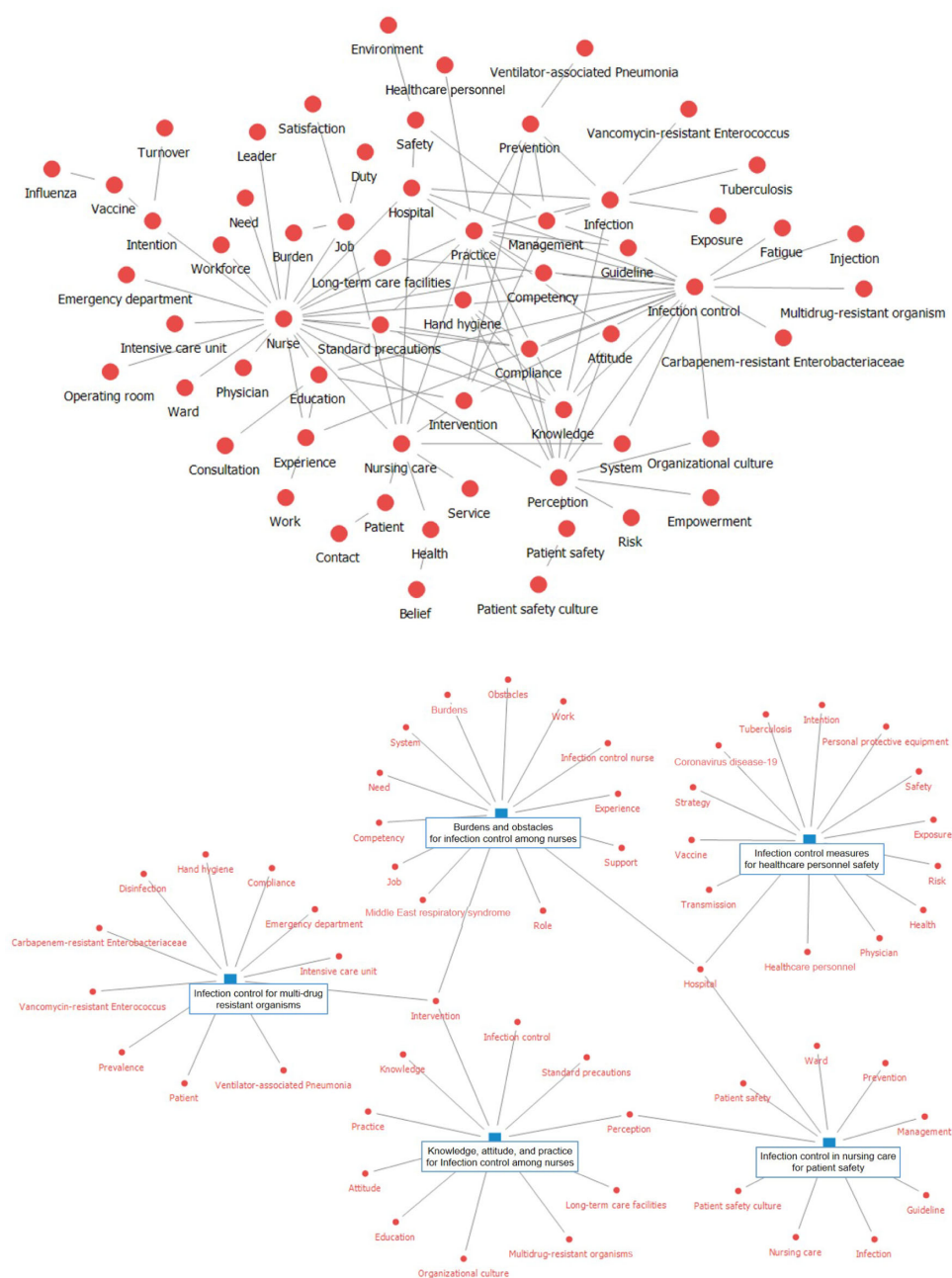
## Overview of infection control in nursing research in Korea over the last 10 years: Text network analysis and topic modeling

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**Background:** With the emergence of new infectious diseases, infection control nursing (ICN) in hospitals has become increasingly significant.

Consequently, research on ICN has been actively performed. We examined the knowledge structure and trends addressed in Korean ICN research.

**Methods:** From 5 web-based Korean academic databases (DBpia, KISS, KMBase, KoreaMed, and RISS), 2,244 studies published between 2013 and 2022 were retrieved using ICN-related search terms (eg, “nurse” or “nursing” along with “infection control,” “infection prevention,” “health-care-associated infection,” or “standard precautions”). After deleting duplicates, the authors assessed titles and abstracts and included 250 research abstracts in this study. Using NetMiner 4.4 software (Cyram, Seoul, Korea), words from abstracts of published articles were extracted and refined, then text network analysis and topic modeling were performed. A text network was structured based on the co-occurrence matrix of key words (semantic morphemes) and was analyzed to identify the main key words. Through topic modeling using the Latent Dirichlet Allocation algorithm, latent topics in the research abstracts were extracted. The authors verified the key words comprising the topic and the result of classifying the documents by topic and named topics. **Results:** The number of



studies, which increased following the outbreak of Middle East respiratory syndrome in 2015, has declined over time but peaked in 2021 with the COVID-19 pandemic. The text network composed of the key words of the research abstracts was generated and visualized (Fig. 1). As a result of text network analysis, the 5 most common key words were 'nurse,' 'infection control,' 'nursing care,' 'practice,' and 'perception' in terms of degree and betweenness centrality. Other prominent main keywords were also identified: 'knowledge,' 'compliance,' 'education,' 'intervention,' 'intention,' and 'safety.' With the application of topic modeling to the research abstracts, 5 topics were derived and named as follows (Fig. 2): "infection control in nursing care for patient safety," "infection control measures for healthcare personnel safety," "burdens and obstacles for infection control among nurses," "infection control for multidrug-resistant organisms," and "knowledge, attitude, practice for infection control among nurses." **Conclusions:** By applying text-network analysis and topic modeling, we obtained insights into Korean ICN research trends. To explore global ICN research trends, further study is necessary to analyze internationally published studies reflecting each country's nursing work conditions.

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#### Screening infection prevention policies for equity impacts

Caitlin McGrath; Yasaman Fatemi; Therese Mirisola; Tanya Ferreira; Adrienne D'Alo; Victoria Konold; Alicia Tieder; Ashley Durkin; Matthew Kronman and Danielle Zerr

**Background:** Infection prevention teams utilize policies to guide practice; however, some policies may inadvertently uphold institutional racism and discrimination. Our institution utilizes an equity impact assessment tool during new policy creation or existing policy updates to identify, reduce, eliminate, and prevent inequities in care. **Methods:** We reviewed all 119 current institution-wide policy documents related to or managed by the infection prevention division at Seattle Children's Hospital using an institutional equity impact assessment tool. The tool asks 6 open-ended questions to help policy owners identify potential inequities and to evaluate how marginalized groups may be affected. Each policy was assessed for its potential to create or sustain inequities for patients, families, or staff. Policies determined to have potential inequities were examined for any language to suggest that equity considerations had been incorporated into the existing policy. Initial policy review was performed by 2 infection prevention physicians, and disagreements were resolved by consensus. We defined the presence of equity considerations as any explicit mention of disparate impact of the policy on marginalized groups or mitigation of such effect. **Results:** Of the 119 policies reviewed, 43 (36%) were identified as having substantial potential to impact marginalized groups and create or sustain inequities. Among them, 42 (98%) of these policies lacked existing equity considerations. The policies with potential equity implications covered the following categories: COVID-19 (including masking, workforce restriction, testing), visitor restrictions, tuberculosis, central-line-associated bloodstream infections (CLABSIs), multidrug-resistant organisms (MDROs), public health reporting, medical behavioral unit policies, off-site affiliate housing policies, special pathogens program (including Ebola, MERS, SARS), surgical-site infections, home care including dialysis, and occupational health-related policies. Examples of policies that did not highlight inequities included those pertaining to construction, water intrusion, and transmission-based precautions. One example of change driven by use of the equity impact assessment tool concerned communication with patients and families about tuberculosis isolation and resulted in creation of a standardized multidisciplinary care conference to better communicate tuberculosis isolation processes (including testing required, visitor restrictions, and anticipated duration of isolation) to families in their language of care. **Conclusions:** Hospital-wide infection prevention policies have the potential to create or sustain existing

inequities. Systematic consideration of equity implications using an equity impact assessment framework could be the first step in mitigating these effects and can result in concrete actions to reduce systemic racism.

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**Subject Category:** Outbreaks

#### *Mycobacterium chimaera* infections in cardiothoracic surgery patients exposed to heating and cooling devices despite infection control measures

Jensie Burton; Yosra Alkabab; Susan Dorman; Jeremy D. Moore; Danny Nixon; Cassandra Salgado and Scott Curry

**Background:** LivaNova 3T heating and cooling devices (HCDs) have been associated with *Mycobacterium chimaera*, a *Mycobacterium avium*-intracellular (MAIC) species, infections after cardiothoracic surgery. We describe our outbreak, which persisted despite escalating infection control measures. **Methods:** We identified patients with a positive MAIC culture following cardiothoracic surgery from January 2015 to the present at our institution. We classified these as "definite," "possible," or "operating room contamination" cases based on positive cultures from sterile sites, airway, or surgical specimens without evidence of infection. To identify patient or surgery characteristics associated with risk for MAIC infection, we conducted a case-control study comparing definite cases to randomly selected unmatched controls of patients over the same period without a positive MAIC culture after cardiothoracic surgery. **Results:** We identified 26 patients with a positive MAIC culture after cardiothoracic surgery: 13 definite, 9 possible, and 4 contamination cases. Among definite cases, the most common surgeries were valve replacements and left ventricular assist devices (5 cases each). The mean time from cardiothoracic surgery to diagnosis was 525 days. Overall, 10 (77%) cases occurred after exposure to our oldest HCDs (manufactured in 2013 or earlier). To date, 16 (62%) have

**Table.** Patients with Definite MAIC Compared to Those Without MAIC After CTS

|                                                           | definite case<br>(N=13) | control<br>(N=47) | P-value |
|-----------------------------------------------------------|-------------------------|-------------------|---------|
| <b>Mean age at surgery in years (SD)</b>                  | 55.0 (13.7)             | 73.0 (128)        | NS      |
| <b>Race</b>                                               |                         |                   |         |
| Caucasian                                                 | 11 (84.6%)              | 35 (74.5%)        | NS      |
| African-American                                          | 2 (15.4%)               | 8 (17.0%)         | NS      |
| Asian                                                     | 0 (0%)                  | 1 (2.1%)          | NS      |
| Unknown                                                   | 0 (0%)                  | 3 (6.4%)          | NS      |
| <b>Male gender</b>                                        | 13 (100%)               | 38 (80.9%)        | NS      |
| <b>Mean body mass index (SD)</b>                          | 27.4 (5.51)             | 27.1 (4.87)       | NS      |
| <b>Diabetes mellitus</b>                                  | 2 (15.4%)               | 9 (19.1%)         | NS      |
| <b>Chronic kidney disease</b>                             | 4 (30.8%)               | 2 (4.3%)          | 0.017   |
| <b>Immunocompromised</b>                                  | 1 (7.7%)                | 3 (6.4%)          | NS      |
| <b>Implants placed during surgery</b>                     | 12 (92.3%)              | 13 (27.7%)        | <0.001  |
| <b>Procedure type</b>                                     |                         |                   |         |
| CABG                                                      | 1 (7.7%)                | 15 (31.9%)        | NS      |
| Bioprosthetic valve                                       | 2 (15.4%)               | 9 (19.1%)*        | NS      |
| Mechanical valve                                          | 3 (23.1%)               | 3 (6.4%)          | NS      |
| CHD repair/palliation                                     | 1 (7.7%)                | 4 (8.5%)          | NS      |
| Heart transplant                                          | 1 (7.7%)                | 1 (2.1%)          | NS      |
| Lung transplant                                           | 0 (0%)                  | 1 (2.1%)          | NS      |
| LVAD                                                      | 5 (38.5%)               | 1 (2.1%)          | <0.001  |
| Other                                                     | 0 (0%)                  | 13 (27.7%)        | NS      |
| <b>Cardiopulmonary bypass (CBP) used</b>                  | 12 (92.3%)              | 28 (59.6%)        | 0.043   |
| <b>Mean CBP time in minutes (SD)</b>                      | 129 (49.4)              | 125 (62.6)        | NS      |
| <b>Mean time in OR in minutes (SD)</b>                    | 429 (137)               | 416 (449)         | NS      |
| <b>Mean HCD age in year at time of index surgery (SD)</b> | 10.9 (2.08)             | 7.39 (3.42)       | 0.0041  |

Abbreviations: SD (standard deviation); MAIC (*Mycobacterium avium*-intracellular complex); CTS (cardio-thoracic surgery); CABG (coronary artery bypass graft); CHD (congenital heart defect); LVAD (left ventricular assist device); CBP (cardiopulmonary bypass)

\*One bioprosthetic valve case also included a CABG, and one bioprosthetic valve case also included a CHD repair.