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Barriers and facilitating factors for the implementation of infection prevention

IPC as well as healthcare in general has changed tremendously since the days of Hungarian physician Ignaz Semmelweis in 1847, which has brought along new challenges for healthcare professionals and policymakers to face. The wide range of care that is given today demands that we adapt infection prevention and control (IPC) guidelines to the needs of patients and healthcare professionals alike. In this thesis, we set out to find which factors influence the application of IPC within different sectors of care. Knowing which factors influence the application of IPC provides healthcare institutions and healthcare professionals with objectifiable targets to improve or deal with.

Because IPC adherence and application was affected by factors on different levels, such as the professional- and organizational level, we suggest organizations approach IPC from a multidimensional perspective following a method called ‘intervention mapping’. Having a designated infection control professional (deskundige infectiepreventie) employed to be in charge of IPC policy and to serve as a contact for IPC questions within different departments of the organization would be very beneficial, as professionals need connection to context rather than preconceived guidelines. If such a designated professional is unable to be contracted, a colleague with IPC expertise such as a ‘contact person infection control’ (contactpersoon infectiepreventie) would be well-suited for this purpose as well. The studies on barriers and facilitators from this thesis will allow psychiatric institutions as well as residential care facilities for people with intellectual and developmental disabilities to ‘hit the ground running’ in identifying potential barriers and facilitators for IPC application within their organization. Furthermore, organizations which participated in our follow-up questionnaire, which served to confirm our findings from the interviews, were provided with individual reports of organization-specific IPC challenges and advice on how to improve IPC within their organization.

Coronavirus-19 in long-term care facilities

One of latest IPC challenges was the SARS-CoV-2 pandemic and its consequences within healthcare facilities. Due to its sudden emergence, little was known of SARS-CoV-2, which led to an international need for scientific information and
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policies to implement. The results from our thesis show how (inter)national guidelines hindered border region SARS-CoV-2 surveillance efforts. We concluded that introduction of SARS-CoV-2 into the long-term care facility in Sittard was likely to have originated from the cross-border town of Gangelt. However, because the region of Heinsberg was not registered as a COVID-19 endemic region at that time, suspect cases originating from Gangelt were not classified as a suspected case according to (inter)national guidelines. Because the case definition of a suspected case was adjusted on a regional level by the public health service and the regional hospital in agreement with the Dutch National Health Institute, we were able to detect a large number of cases (including asymptomatic cases) which may otherwise have been missed. Therefore, we emphasise the need for these border regions to be able to adapt national guidelines based on the cross-border situation and an overall need for cross-border collaboration. These findings and recommendations were additionally published in the newspaper ‘Dagblad De Limburger’ (appendix) (1).

Additionally, we determined which symptoms were associated with COVID-19 in long-term care facility residents and staff, as well as the role of viral load (measured in Ct values) on the appearance of these symptoms and disease outcome (mortality). Our findings showed a potential relationship between viral load and appearance of symptoms and case mortality. In light of these results, we propose that viral load levels could be used to enable more personalised IPC measures, such as personal isolation periods. When the viral load of a patient drops below a certain threshold (infectiousness threshold value), the patient would be safe to leave isolation early. Because (longer) periods of isolation are associated with poor(er) psychological outcomes, restricting the length of isolation to the maximum duration set in (inter)national guidelines would minimize the effect on patients. This application of viral load levels could be extended to other viral diseases. However, a cost-benefit analysis should be performed to evaluate the application of such a testing policy.

Antimicrobial resistance

Although overshadowed by the recent SARS-CoV-2 pandemic, antimicrobial resistance remains one of the most important topics for healthcare internationally. As part of the I-4-1-Health Interreg project, we conducted a multitude of infection risk scans, in which we measured factors related to IPC in a standardized way in Dutch and
Belgian long-term care facilities and child day care centres. Participating long-term care facilities and child day care centres were given an individual report of their IPC performance with advice on how to improve IPC specific for their organization. The overall results were also visualised in three infographics (appendix) and published on the webpage of the regional public health services. Because we performed these standardized infection risk scans in different sectors of care, we were able to better compare results across different care sectors. These results can be used to monitor trends across sectors and to shape regional and national policy.

The surprisingly large amount of ciprofloxacin-resistant Enterobacterales carrieryship in children indicates how easily resistant bacteria can spread. Although significant differences in extended-spectrum beta-lactamase-producing bacteria and ciprofloxacin-resistance carriage were found between Belgium and the Netherlands, IPC-related predictors remain unclear. Therefore, we propose that predictors outside the scope of long-term care facilities and child day care centres may be responsible for this difference between countries. A hypothesis is that the difference in prescribing behaviour of Dutch and Belgian GPs has impacted the overall prevalence of the general population, which would be reflective in long-term care facilities and child day care centres. Therefore, we recommend future efforts to focus on surveillance of highly resistant microorganisms carriage within healthcare institutions as well as the general population.

References