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COVID-19 Infection Prevention and Control (IPAC) in Long-Term Care Facilities in two OECD countries, the Netherlands and Denmark: Best Practices, Implementation, Compliance

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Executive summary

This Issue Note summarizes our understanding of ‘best practices’ for COVID-19 infection prevention and control (IPAC) in long-term care facilities (LTCFs) in two OECD countries recognized as high performing in this area—the Netherlands and Denmark.

Our analysis led us to an inclusive definition of IPAC measures. We considered policies, procedures, and practices in the health, social, and long-term care system that impact the prevention of infections in LTCFs (not merely the IPAC practices typically considered by the clinical/medical discipline of infectious disease control). In that sense, we considered IPAC more as a concept than as a particular set of pre-defined clinical practices. We describe how these systemic ‘best practices’ in IPAC were implemented in the first place (i.e. supports, tools, policies that enabled adoption), and how ongoing compliance over time was enabled. Considerations for Canada draw from both the published literature and from our expert consultations.

Question

In countries belonging to the Organization for Economic Co-operation and Developing (OECD) that have implemented best practices/standards for IPAC of COVID-19 in LTCFs:

1. What are the 3-5 best practices for IPAC?
2. How were these IPAC best practices implemented (i.e. what supports/tools/methods were used to encourage adoption)?
3. What steps were put in place to ensure compliance with IPAC measures over time to meet performance expectations (i.e. what measures/systems/processes increased adherence to best practices/standards)?

The main lesson from both the Netherlands and Denmark is that we reap what we sow. In other words, systems are perfectly designed to get the results they get.¹ Investment in health, social, and long-term care system design (and redesign) is crucial because future consequences, such as pandemics, are inevitably shaped by it.

When the COVID-19 pandemic began, both the Netherlands and Denmark already had pre-existing, robust, health and social care systems, into which long-term care (LTC) was well-integrated. Their respective long-term care systems were relatively well-resourced through long standing public investment, enabled by cultures that not only value older adults but have also chosen to invest public funds in their well-being. In other words, both the Netherlands and Denmark are universal welfare states with strong state capacity and a high degree of political trust, two systemic and cultural factors that have enabled policy implementation both before and during the pandemic.

Traditional IPAC measures as envisioned by the clinical/medical discipline of infectious disease control—such as an embedded IPAC program, appropriate ratio of IPAC staff, surveillance, use of routine practices and additional precautions, established reprocessing, environmental cleaning, hand hygiene program, infrastructure standards, efficient microbiology support to access testing with appropriate turn-around times, and effective HVAC—are layered upon the erstwhile solid foundation of the robustly designed and integrated health, social, and long-term care systems found in both the Netherlands and Denmark. As such, the ‘best practices’ in IPAC in these two countries are actually key features built into the design of their pre-existing health care, social care, and long-term care systems themselves, rather than ‘quick fixes’ employed only during the pandemic. Our analysis shows that these key system features are actually the ‘best practice’ in IPAC in these countries.

Throughout this report we describe the key IPAC features of the health, social, and long-term care systems themselves (which underpin their more traditional infection prevention and control measures) that have led to Denmark and the Netherlands achieving relatively low COVID-19 infection rates in LTC.

Summary of ‘best practices’ for IPAC in the Netherlands (see Country Profile for details):

- ‘Intelligent’ visitor ‘lockdown’
- Investment by government in public communications informed by behavioural science
- Well-funded LTC system
- Relatively well-paid LTC staff
- ‘Cohort nursing’ and ‘nurse cohorting’
- Centralized allocation of personal protective equipment (PPE) via a single new national consortium.

Summary of ‘best practices’ for IPAC in Denmark (see Country Profile for details):

- Political attentiveness and broad public support for the LTC sector
- De-institutionalized, home-based, care for older adults
- Individual ‘abodes’ (i.e. single rooms) with home-like living spaces in all modern nursing homes
- Professionalization of LTC sector and decent working conditions
- Highly integrated health, social, and long-term care systems
- High COVID-19 vaccination rates among staff and residents ‘nursing homes’ and re-vaccination (i.e. ‘boosters’/‘third dose’), without vaccine mandate due to high willingness
- Sick pay for LTC staff and health care professionals
- Local customization of visitor policies

This report has several limitations, mainly due to the rapid timelines for production:

- Few published studies and no reviews of ‘best practices’ or of adoption supports, or strategies to enable adherence over time.
- Reliance on ‘real world’ evidence and perspectives from selected key informants, which may not represent all views and experiences.

Introduction

This Issue Note describes 1) ‘best practices’ in infection prevention and control (IPAC) in long-term care facilities (LTCFs) in selected OECD countries; 2) supports that enable adoption of best practices, 3) steps that promote ongoing compliance with best practices over time; and 4) considerations for Canada.

Our analysis led us to an inclusive definition of IPAC measures. We considered policies, procedures, and practices in the health, social, and long-term care system that helped prevent infections in LTCFs (rather than only the IPAC practices typically considered by the clinical/medical discipline of infectious disease control). We describe how these ‘best practices’ in designing systems for IPAC were implemented in the first place (i.e. supports, tools, policies that enabled their adoption) and how ongoing compliance over time was enabled.

The prevention and ongoing control of SARS-CoV-2 infections in long-term care facilities has been a formidable problem throughout the pandemic. This was most extreme in Wave 1 when COVID-19 first exploded in Ontario and Quebec in the Spring of 2020. Canada’s response in LTCFs has been characterized as “uneven and less robust for a system already characterized as being poorly staffed and funded at its baseline”². Among 12 OECD nations, Canada stands out with the highest mortality ratio comparing LTC home residents with community-dwelling older persons (73.7 vs. the OECD 12-country average of 25.5). Canada’s LTC homes resident deaths accounted for a high percentage of its overall deaths (78.4% vs. the OECD 12-country average of 47.3%) as measured in July 2020.² Though we have learned much, infection prevention and control (IPAC) in LTCFs remains in sharp focus.

Although we focused on what we learned about ‘best practices’ in IPAC specific to COVID-19, we also consider the state of IPAC measures more broadly, beyond COVID-19. Though COVID-19 has exposed weaknesses in managing a respiratory virus, it has also revealed gaps in IPAC more generally in this unique setting where age and multi-morbidity of many residents increases their vulnerability.

What constitutes ‘best practices’ depends to some extent on contextual factors including cultural values, norms, and expectations. ‘Best’ practices are optimized for a particular place and time and don’t necessarily transfer well between cultures.³ What may be considered ‘best’ in one country may not be so in another. The *intent* of the practice may transfer, but the practice itself may not. This doesn’t mean we can’t learn from other countries, but it does mean that their ‘best practices’ may need to be adapted and refined with Canada’s culture and context in mind.

There is no consistent definition in Canada, let alone globally, of what constitutes a ‘long term care facility’.¹ Health Canada describes these facilities as providing care to individuals with health conditions that don’t require hospitalization, but require 24/7 supervision, nursing, and personal care. (Personal Communication, Health Canada, September 16, 2021). This includes professional health services, and other services such as meals, laundry, and housekeeping.⁵ LTCFs are not covered under the Canada Health Act because the Act does not apply to facilities that provide “nursing home intermediate care service or adult residential care service”⁶. As such, there is not consistency across Canada in what facilities are called, let alone among OECD countries, (e.g. nursing home, personal care facility, residential care facility, assisted living, skilled nursing facility). This obviously makes comparative analysis

¹ e.g. “Within Canada, long-term care homes are facilities that provide 24-hour functional support for people who are frail, require assistance with their daily activities, and often have multimorbidity. Across the provinces and territories, these facilities may be known as long-term care homes (in Ontario, Saskatchewan, British Columbia, and Yukon), nursing homes (in Nova Scotia, and New Brunswick), personal care homes (in Newfoundland and Labrador as well as Manitoba), long-term care facilities (in Newfoundland and Labrador, Prince Edward Island, British Columbia, and Northwest Territories), residential care facilities (in Nova Scotia, Alberta and British Columbia), special care homes (in New Brunswick and Saskatchewan), continuing care facilities (in Northwest Territories), or continuing care centres (in Nunavut). In Québec, they are known as centres d’hébergement de soins de longue durée (CHSLD).”⁴

difficult. For this Issue Note we took an inclusive approach and considered available evidence that reported on our outcomes of interest in any congregate care settings, broadly defined.

Methods

During our preliminary discussions with Canadian experts, it was clear that our focus should be on two countries considered to be high performing in this area among all OECD comparators—the Netherlands and Denmark. We employed a mixed-methods approach to produce this integrated summary. First, we undertook in-depth, one-on-one, semi-structured telephone interviews with key informants in the LTC sector, both within Canada and globally. (Interview Guide, Appendix 1 and Consultations, Appendix 2). We recorded most interviews, transcribed them, and supplemented this with hand-written notes taken during the interviews. Second, as part of our evidence scan we searched several databases. Our sources and search strategy are available in Appendix 3. Given the time available, we searched for evidence using a hierarchical approach. We prioritized evidence syntheses, integrative/narrative reviews, guidelines, and systematic reviews. Where these were not available, we considered selected single studies (qualitative and quantitative) that we judged to be credible. We hand-searched reference lists of selected sources. Third, we used Google to search the grey literature for reports, policy literature, white papers, and government documents; we critically evaluated these sources including the authority and objectivity of their authors.⁷

Limitations

This report has several limitations, mainly due to rapid timelines. Most important is the fact that in the 18 months since WHO first declared the pandemic on March 11, 2020, although much has been learned about IPAC in LTCFs specific to SAR-COV-2, relatively little has been published in peer-reviewed journals on ‘best practices’ in IPAC in LTCFs, or how to implement these practices, or how to ensure ongoing adherence. As such, we also relied on ‘real world’ evidence from selected key informants which may not represent all views and experiences in that country. Related to this, given the short turnaround time, this was not a systematic review; consequently, some evidence may have been missed. Although several people on the CanCOVID team contributed to study selection, only a single experienced reviewer screened the studies without verification by a second reviewer. Validation procedures included triangulating to corroborate or refine the findings, seeking disconfirming evidence, and member checking with the key informants.

Despite these limitations, we are confident in the credibility of the sources we consulted. As such, though we urge some caution in interpretation, we suggest it is reasonable to give weight to our findings when crafting policy related to IPAC in LTCFs.

Results

Evidence from two OECD countries—the Netherlands and Denmark—sheds light on their ‘best practices’ in IPAC in LTCFs, the adoption supports that enabled implementation of these practices, and the mechanisms in place to enable adherence over time. These are described by country here with key points summarized in Table 1.

Country Profiles

The Netherlands

Description of long-term care system

The Netherlands was the first country in Europe to introduce compulsory social health insurance for LTC in 1968. Guided by national legislation, coverage for LTC is provided and organized by the Dutch government, with local authorities and municipalities responsible for the delivery of LTC services in

institutions, nursing homes, residential homes, and communities through home-based nursing care. Independent regional care offices (in 32 care regions) contract with residential LTC providers in their region. Social care is purchased and organized by municipalities.⁸ The Netherlands is one of the highest spenders on long-term care among OECD nations at €20 billion in 2017⁹ with public spending at 3.7% of GDP (2017) compared to 1.3% of GDP in Canada.¹⁰ CIHI's comparative data from May 2020 show that LTC residents accounted for 15% of all reported COVID-19 deaths in the Netherlands, compared to 81% in Canada.¹¹ Per our key informants, Dutch mortality of 15% may be underreported due to limited testing within the long-term care sector in the first wave of the pandemic.

In 2015, after almost two decades of political discussion and reports⁸, reforms in long-term care—major overhauls—were implemented to simultaneously reduce spending and promote/support more 'ageing in place'.¹² By way of three key legislative Acts, long-term care was radically reoriented.

The basic principle of this decentralizing reform is "local as far as possible; regional where necessary".¹³ First, the location of care shifted such that more care now occurs at home (preferably provided by 'informal' caregivers) and less in institutions. Second, care was decentralized, with municipalities taking responsibility for social care (initially with a reduced budget based on the assumption that locally organized care would be more efficient). This reform was not without controversy in the early stages given the expectation of substantial savings. Dissatisfaction and concerns initially raised about the quality of care resulted in new investment in long-term care.¹⁴ Third, health insurers took over responsibility for contracting community nursing, with district nurses playing a key role in integrating different aspects of care and support. Boundaries between the three regimes are not always clear-cut which has created coordination challenges and opportunities for cost-shifting from one regime to another.¹⁵

National legislation underpins the Dutch long-term care ecosystem through these three Acts:

1. Long-term Care Act
 - Also known as Wlz, this national Act covers the most vulnerable who require 24/7 supervised care in long-term care facilities or at home. These services are funded through both a compulsory long-term care health insurance policy with a 9.65% levy on all taxpayers to a maximum amount per year and income/wealth-based co-payments.¹³ Standards are set nationally.
2. Social Support Act
 - Also known as Wmo, this Act is designed for those who need some help—such as meal and transportation services, funding to adapt homes, community day care—but who do not require or qualify for care that falls under the Long-term Care Act; these services are funded through taxes and income/wealth-based co-payments.
3. Health Insurance Act
 - Enacted in 2006, this Act covers direct health care, activities of daily living, and personal care through compulsory health insurance policies offered by 23 competing private not-for-profit cooperatives ('managed competition') and is financed through payroll taxes, general taxes, community-rated premiums, and co-payments.

Of those age 85+, one-third use services under the Long-term Care Act and one-third under the Social Support Act. Under all three Acts, people have the option to receive care 'in-kind' or they may (with permission) opt for a personal budget to arrange their own care/support.¹⁶ In 2016, about 14,200 personal budget holders each received around €20,000 annually⁹ (\$30,000 CDN at Sept. 2021 exchange rates).

Since 2015 there have been efforts to scale down the number of people living in what the Dutch call 'nursing homes', ideally to the last one to two years of life, instead putting resources into enabling people to live at home longer through investment in community nursing and other geriatric services. Increased pressure on unpaid caregivers, such as family and friends, during the pandemic has sparked questions about whether there should be an intermediate option between living at home and in a LTCF.

During the pandemic the nursing home sector has followed directives announced by the National Institute of Public Health and Environment (RIVM). RIVM convened a national Outbreak Management Team which advises the Ministry of Health, Welfare and Sport (VWS). The Dutch government ultimately decides which measures are to be implemented, and each province and region executes these measures under the supervision of the Area Health Authority.¹⁷

The Netherlands: Best Practices in IPAC in LTCFs

- (1) 'Intelligent' visitor lockdown
 - a. During Wave 1, the national government announced national measures to prevent the spread of SARS-CoV-2, including that family visitors were initially not allowed in LTCFs.¹⁷ In the initial 'panic', policies ostensibly aimed at safety and preservation of life took precedence. The Dutch government then tried various pilots, cautiously opening nursing homes to one visitor per day; this did not lead to new infections.¹⁸
 - b. By Wave 2 starting in June 2020, and in a "display of democratic accountability"¹⁹, the Dutch government responded to intense pressure from residents, relatives, and staff to keep nursing homes open to visitors and to let local nursing homes decide their own visitation rules. Indeed, there was a commitment to never impose a national visitor ban in nursing homes again, enshrined in law through the Temporary Measures Act COVID-19 passed in October 2020.
 - c. A centralized health care inspectorate monitors how nursing homes exercise their freedom to ensure visitor policies are neither too lenient nor too strict. This approach is consistent with the deeply embedded Dutch value of well-being and quality of life (over longevity alone), envisioned as a 'good' life from the individual's perspective, with self-direction, connection, and meaning.²⁰ It is also consistent with the Dutch value of consensus-seeking in decision-making. Though this may (or may not) have compromised IPAC, the tension between limiting SARS-CoV-2 transmission vs. supporting the quality of life wishes of LTCF residents and their families resulted in more relaxed and bespoke visitor policies that allowed visitors in limited numbers, with contact tracing when necessary.
- (2) Investment in communications informed by behavioural science
 - a. Recognizing that almost all policy is about behavioural change, the Dutch government created a COVID-19 behavioural insights team to understand behaviour in context and designed communications and policies anchored in behavioural science.²¹ The intent was to help the public understand the new policies. This was in line with the WHO's recognition of the important role of behavioural science in the fight against pandemics.
- (3) Well-funded LTC system
 - a. The Netherlands is one of the highest spenders on LTC, with 27% of total health care spending going to long-term care. This is more than double the EU average.¹² Nursing homes are mainly under non-profit ownership (88%) with for-profit owners (12%) playing a minor role. Starting with a strong LTC system enabled strong IPAC practices.
- (4) Well-paid staff in LTCFs
 - a. Staff caregivers in Dutch LTCFs are well-paid, a practice that pre-dates the pandemic²²; employment in LTCFs is valued and recently there has been fierce discussion in parliament over whether to pay healthcare personnel more. On September 22, 2021, the Dutch government committed an additional €675 million (nearly \$1B CDN) to increase salaries for healthcare personnel by 1.5%.²³
 - b. To deal with staffing shortages that pre-dated the pandemic but which were exacerbated by the pandemic, facilities used students, interns, retired staff, and military nurses. When some personal care services were cancelled (e.g. hairdressing, manicures, physical therapy) those individuals were reorganized to provide patient care instead.
 - c. A large IT-platform, named Extra Hands for Healthcare, was launched to match healthcare personnel with providers in need.²⁴
- (5) 'Cohort nursing' and 'nurse cohorting'

- a. 'Cohort nursing' (i.e. residents grouped and isolated together) was used both when patients were infected, but also preventatively if no resident was infected but the risk of infection was high due to, for example, high infection rates in the area.
 - i. Isolation of SARS-CoV-2 infected residents in single rooms was not ideal. It was done sometimes during the first few months of the pandemic, but it was challenging for some residents to adhere to, especially those with dementia and requiring psychogeriatric care who wandered or could not be instructed to remain in their rooms or maintain physical distance. Cohort nursing seemed the better option rather than isolating residents in single rooms.
 - b. 'Nurse cohorting' (i.e. nurses designated to work with infected residents) was also used when possible given staff shortages.
 - c. Nursing home residents live in single rooms (most often) within wards. If building structure allowed for it, wards were divided into units as small as possible (e.g. some with as few as three residents/unit) to enable cohort nursing. This supported IPAC while still allowing the residents to congregate for activities within units.
 - d. Long-term care facilities collaborated regionally by transporting infected patients to designated COVID-19 units, centres, or houses.
- (6) Centralized allocation of PPE via a single new national consortium
- a. Following short supplies of PPE early in the pandemic, the Dutch government launched a new centralized allocation mechanism for PPE to improve distribution not only in hospitals, but also in long-term care facilities.

The Netherlands: Strategies to Support Adoption of 'Best Practices' in IPAC in LTCFs

- (1) Pre-existing collaboration between LTCFs
 - a. LTCFs worked together through pre-existing regional networks that held meetings about regional collaboration or shared reports to learn from each other. There was also collaboration with GGD-GHOR Nederland, the association representing Regional Public Health Services (GGD) and Regional Medical Emergency Preparedness and Planning (GHOR).
- (2) Outbreak Teams in LTCFs
 - a. In Wave 1, pre-existing IPAC teams in each long-term care organization (each organization has multiple nursing homes) became specialized COVID-19 outbreak teams.
- (3) A combination of strict regulatory power by government and discretionary power given to long-term care professionals to make certain decisions
 - a. The Dutch government enabled adoption of IPAC by sometimes imposing strict regulatory measures and other times allowing professionals with expertise in long-term care to adapt traditional rules and standards to local settings.

The Netherlands: Strategies to Enable Ongoing Adherence to 'Best Practices' in IPAC in LTCFs

- (1) Developed and implemented 'best practice' guidelines and protocols to support IPAC
 - a. For example, Verenso, the Dutch Association of Elderly Care Physicians, developed and regularly updates directives, which are disseminated and implemented in most nursing homes through the internal crisis team.¹⁷
- (2) In the future, adherence to IPAC may be enabled by rethinking the architectural design of LTCFs. Future LTC facilities/homes, co-designed with older adults, families, and caregivers, will incorporate best practices in IPAC, which may be facilitated by, for example, smaller buildings, and sub-units within buildings each with their own entry to facilitate segmentation during a pandemic, and by improvements in ventilation.²⁵

Denmark

Description of long-term care system

Long-term care is an integral part of Denmark's health care system, following the principle of universality in the Nordic public service model. The hallmark of Denmark's long-term care system is a high level of decentralization, enabled by legislation. National legislation sets broad framework and standards for service provision, but 98 municipalities within five administrative regions are responsible for long-term care policies, including establishing criteria for eligibility/entitlement and provision/regulation of service delivery.²⁶ As such, though decentralized, care is also highly integrative. Care is mainly free at the point of service and financed through general taxation. Public spending in Denmark on LTC comprised 2.5% of GDP, surpassed only by the Netherlands (3.7% in 2015) and Sweden (3.2%).¹⁰ By comparison, in 2017 Canada spent 1.3% of its GDP on publicly-funded LTC.¹⁰ Nursing home residents in Denmark made up one-third of the COVID-19-related deaths (as of April 24, 2020).²⁷

During the 1970s, Denmark was one of the first European countries to deinstitutionalize long-term care and replace it with community-based solutions.²⁸ More than two-thirds of older adults who need long-term care receive support in their own homes, such as activities of daily living, and person-centred reablement²⁹ (restorative care) to maintain or regain the skills to continue living independently.²⁶ The Danish perspective that guides reablement is to "add life to remaining years, not years to remaining life".³⁰ Among those 65+, about 11% receive home care.²⁷ Denmark's home care policy is the most generous among Nordic countries, measured in the proportion of those age 80+ receiving home care vs. nursing home care. Access is enabled by no cost sharing or means-testing at the point of service for home-based care, and reasonable monthly fees for housing and food in nursing homes. Around one-third of home care providers are for-profit, but home care and preventative home visits are still free at the point of service.

Legislation passed in 1987 banned the new construction of traditional residential care institutions with multiple beds in each room that resemble hospitals wards, replacing them with modern nursing homes to ensure residents have individual living spaces with communal facilities for dining and socializing. 2003 legislation marked the creation of a private sector, though private for-profit nursing care remains marginal, in part due to a string of bankruptcies after 2013 when a new law aimed to increase real competition among providers.²⁶ Most nursing home facilities are under private not-for-profit ownership. There are now 932 nursing homes in Denmark, housing 3.6% of the population aged 65 and older, or about 42,000 people.²⁷ People aren't generally placed into long-term care until they require more than about 20 hours of care per day.³¹ Every nursing home has its own General Practitioner (GP) physician with expertise in geriatric medicine and there is one care worker per 2.5 residents during the daytime. Waiting time for residential care is not to exceed two months, with some local variation.³²

Denmark: Best Practices in IPAC in LTCFs

- (1) Political attentiveness to protecting the most vulnerable enabled by broad public support for the LTC sector
 - a. LTC is among the most important and popular of public services, ranking as high as schools and day care. Broad public support for the LTC sector enables politicians to invest in it.
- (2) De-institutionalized, home-based care for older adults, including frail elderly
 - a. Fewer Danes live in LTCFs than in Canada, which in and of itself is a 'best practice'. IPAC in home care was, thus, comparatively easier to implement.
- (3) Individual 'abodes' with home-like living spaces in all modern nursing homes
 - a. Most nursing homes are publicly owned facilities with one person per room, and one toilet per room, typically connected to shared common spaces. This feature helped to control and prevent infection in LTCFs.
- (4) Professionalization of the LTC workforce and decent working conditions
 - a. Staff in LTCFs are formally employed and well-trained, with 80% of staff having formal care education.³³

- (5) Highly integrated social and health care systems
 - a. High integration between these systems enabled communication and learning across the health and social care sectors. This communication supported wrap-around IPAC efforts in long-term care.
- (6) High COVID-19 vaccination rates for nursing home staff and residents and re-vaccination (i.e. 'boosters'/'third dose') for nursing home residents
 - a. Denmark has high vaccine willingness without a vaccine mandate when compared to seven other countries (i.e. Sweden, UK, USA, Italy, France, Germany, and Hungary). 85% of those age 12+ have received 1+ dose; 96% of those age 50+ are fully vaccinated.³⁴ Timely booster shots for vulnerable residents will help to reduce new infection and subsequent transmission.
- (7) Paid sick leave
 - a. Employers are reimbursed for any sick pay they have had to pay out to employees diagnosed with, suspected to have contracted, or in quarantine due to, COVID-19.³⁵
- (8) Local customization of visitor policies
 - a. A formal ban on visitors, introduced on April 6, 2020 by the Board of Patient Safety ²⁷, was later abandoned after Wave 1 when it was established that "clients and their loved ones have experienced major negative side effects". Visits are now possible everywhere with "variation in the execution" decided locally.³⁶

Denmark: Strategies to Support Adoption of 'Best Practices' in IPAC in LTCFs

- (1) Government's early recognition of threat
 - a. A sense of urgency and swift early response enabled IPAC adoption and change management.
- (2) Early production of IPAC guidelines
 - a. Strict IPAC guidelines were produced by the Danish authorities just five days after those issued by the European Centre for Disease Prevention and Control (ECDC).³⁷ These guidelines enable rapid reduction of population contact rates reducing community spread (e.g. border lockdown, local restrictions). Danish guidelines for the testing of residents and staff in LTCFs were issued one month prior to ECDC guidelines. Though guidelines do not self-implement, a sense of urgency communicated by the government enabled their adoption.
- (3) Building/infrastructure design was key to adopting 'best practices' in IPAC
 - a. With a tradition of social inclusion and innovative contemporary design, Denmark leads the way internationally in its architectural design for older adults.³⁸ It is standard for nursing homes to have one person per room. During the pandemic, residents were reorganized into smaller 'family' groups to support well-being.
- (4) New and long-standing government investment in LTC
 - a. Longstanding investment in home care and community services reduced the number of people at risk in congregate care settings. New investment to local authorities during the pandemic allowed them to carry out or monitor IPAC measures.
- (5) Strong cultural value among Danes and the Government of Denmark of preserving autonomy and control for older adults
 - a. This cultural value supports adoption of best practices in IPAC, by encouraging government to invest in LTC practices that inherently prevent infections, including home care which reduces congregate living and single room occupancy in nursing homes.

Denmark: Strategies to Enable Ongoing Adherence to 'Best Practices' in IPAC in LTCFs

- (1) Continuous updating of IPAC guidelines as evidence changed and communication structure/plan
 - a. Adherence to 'best practices' is enabled through continuous updating of guidelines and a communication plan helps ensure that the changes are implemented.
- (2) High degree of vertical coordination and engagement across LTC

- a. Though decentralized, care is also highly integrative across the LTC sector. This enables collaboration rather than competition, which supports ongoing adherence to 'best practices'.
- (3) High degree of horizontal coordination between LTC, health, and social care
 - a. Coordination and integration between the LTC, health, and social care sectors, and clear communication structures with municipalities, enables good communication, which promotes adherence.
- (4) Relatively high and stable trust in public institutions and in authorities' management of the pandemic³⁹⁻⁴¹
 - a. Denmark is culturally a high-trust country. Most Danes "simply followed the advice of the authorities and didn't take it upon themselves to police others"³⁴. Trust has been protected and sustained through "radical transparency" in official communications, particularly regarding vaccines. Political cynicism is the strongest predictor of vaccine skepticism, i.e. "beliefs that political elites are corrupt and incompetent, and in conspiratorial thinking". Though transparency itself cannot reduce immediate vaccine skepticism, transparency is nonetheless of key importance for sustaining long-term trust and avoiding the spread of conspiracy beliefs.⁴² High compliance allowed for fewer restrictions, so opposition was not fuelled. Rather, tools such as mass testing and vaccine passports are viewed "not as control tools, but tools for protecting each other and returning to normalcy"⁴³.

Table 1. ‘Best Practices’ for IPAC in LTCFs, Adoption Supports, and Adherence Strategies

Country	‘Best Practices’ for IPAC in LTCF	Strategies to Support Adoption of ‘Best Practices’	Strategies to Enable Ongoing Adherence to ‘Best Practices’
The Netherlands	<ul style="list-style-type: none"> • ‘Intelligent’ visitor ‘lockdown’ • Investment in communications informed by behavioural science • Well-funded LTC system • Well-paid LTC staff • ‘Cohort nursing’ and ‘nurse cohorting’ • Centralized allocation of PPE via a single new national consortium 	<ul style="list-style-type: none"> • Pre-existing collaboration between LTCFs • Outbreak teams in LTCFs • Strict regulatory power by government and discretionary power yielded to long-term care professionals 	<ul style="list-style-type: none"> • Development and implementation of ‘best practice’ guidelines and protocols to support IPAC • Future adherence may be enabled by rethinking the design of LTCFs
Denmark	<ul style="list-style-type: none"> • Political attentiveness and broad public support for LTC sector • De-institutionalized, home-based care for older adults • Individual ‘abodes’ (i.e. single rooms) with home-like spaces in all modern nursing homes • Professionalization of the LTC workforce and decent working conditions • Highly integrated social and health care systems • High vaccination rates for nursing home staff and residents and re-vaccination/‘boosters’ for nursing home residents (without mandate due to high willingness) • Sick pay for LTC staff and health care professionals • Local customization of visitor policies 	<ul style="list-style-type: none"> • Early national recognition of COVID-19 threat • Early production of COVID-19-specific IPAC guidelines • Building/infrastructure design key to adoption • New and long-standing government investment in LTC • Strong cultural value of preserving individual autonomy and control 	<ul style="list-style-type: none"> • Continuous updating of COVID-19 IPAC guidelines as evidence changed plus communication structures/plans informed by behavioural science • High degree of vertical coordination and engagement across LTC sector • High degree of horizontal coordination between LTC sector, health care, and social care • Relatively high and stable trust in public institutions

Discussion

Typical ‘best practices’ in IPAC are those traditionally used by the clinical/medical discipline of infectious disease control— such as an embedded IPAC program, appropriate ratio of IPAC staff, surveillance, use of routine practices and additional precautions, established reprocessing, environmental cleaning, hand hygiene program, infrastructure standards, efficient microbiology support to access testing with appropriate turn-around times, and effective HVAC.

As we learned the Netherlands and Denmark, however, other ‘best practices’ in IPAC are found in the design of their health, social, and long-term care systems themselves, underpinning these more traditional approaches to IPAC.

The designs of the Dutch and Danish health, social, and long-term care systems are rooted in country-specific characteristics, like culture, values, politics, economics, and history. When the COVID-19 pandemic arrived, governments in the Netherlands and Denmark already had broad public support for, and, thus, political attentiveness to, the LTC sector. These countries already had robust, integrated health, social, and long-term care systems that, by the very nature of their designs, helped to prevent and control infections. Strong home- and community-based care systems for older adults—with considerable public investment—rather than institutional care, support the majority of older adults who are ‘aging in place’. Reablement services (or restorative care as it is called in Denmark) help older people regain and retain the capacity to function independently. When the pandemic began, these key features of both the Dutch and Danish systems resulted in fewer adults at-risk in 24-hour congregate care in the first place than in Canada. For those requiring 24/7 care outside the home, there were already modern ‘nursing homes’ which, by design, helped reduce the spread of SARS-Cov2.⁴⁴ In these LTCFs, form follows function, with building design features—such as smaller home-like structures, with single rooms—enabling IPAC. Both the Netherlands and Denmark had already built a professional workforce of skilled and relatively well-paid caregivers in the LTC sector to support both those aging in place and those living in care homes. Sick pay was already a feature in labour laws. Dutch visitor policies became more ‘intelligent’ in response to intense public pressure after Wave 1, and the Danes also customized their visitor policies after establishing the major negative side effects of a formal ban on visitors. Insights from applied behavioural science informed a holistic response to government communications and messaging about COVID-19 in close collaboration with both Dutch and Danish health authorities.^{45,46}

In terms of ‘adoption supports’, in a sense the pandemic itself was the key ‘adoption support’ for advancing IPAC initiatives in LTCFs. Nothing incites behavioural change like a sense of urgency. Beyond that, the Netherlands relied on pre-existing inter-sectoral collaboration—between health care, social care, and long-term care—with considerable discretionary power yielded to long-term care professionals to act in the best interest of those in their care. Denmark was quick to recognize the threat of COVID-19 which enabled the adoption of strategies to reduce harms. They produced (and continuously updated) IPAC guidelines and invested more money in LTC to support their cultural value of preserving autonomy and control. A relatively high and stable degree of public trust in government enabled adoption of ‘best practices’ in Denmark.

Conclusion

What are the lessons for Canada?

The utility of public policy itself to drive human behaviour change should not be underestimated: expecting people to do what is best for themselves based on scientific evidence works for some people, as does cajoling, or a “good ‘ol” set of rules, but few things are as effective as introducing clear policy directives. In both the Netherlands and Denmark, preventing and controlling COVID-19 infection is inherent in the policies that underpin their respective health, social, and long-term care systems.

As with any system design, we cannot just pluck selected features or policies from other health, social, and long-term care systems and expect the same outcomes. This can only lead to the ‘Mr. Potato Head’ approach to health system design; the ear is where the nose is supposed to be. This doesn’t mean we can’t learn from other countries, but it does mean that if Canada expects to get the same outcomes as the Netherlands and Denmark, our ‘best practices’ need to be adapted and refined to look more like theirs. ‘Best practice’ to prevent and control COVID-19 infections in LTCFs begins with a holistic and systemic approach to health, well-being, and autonomy in older age, a lesson exemplified by the Netherlands and Denmark. If Canada expects outcomes like theirs, we have to do more of what they do to enhance the likelihood of achieving similar outcomes for older Canadians.

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Appendices

Appendix 1: Interview Guide

August 11, 2021

DRAFT Interview Questions **Compliance with IPAC best practices in LTC**

Date of interview:

Interviewer:

Interviewee(s):

Country of expertise:

About CanCOVID

- Thank the interviewee for meeting with us and do a quick round of introductions.
- Provide a brief overview of CanCOVID – something similar to the following:

CanCOVID was conceived in March 2020, in response to the COVID-19 pandemic. Mandated by the Government of Canada, our role is to enable science-to-policy action during the COVID-19 pandemic and post-pandemic future. We help connect people and resources to rapidly produce and disseminate credible knowledge to inform public health guidance. We encourage multidisciplinary collaborations to support Canada's scientific effort. Our work provides government partners with a better line of sight to existing and emerging COVID-19 science and research.

Consent

- The information that we gather from this meeting will be used in our report, with results reported anonymously.
- As we are consulting with experts around the world, and much of the information we gather will be in the form of 'expert opinion' we would like to include a list of those we have consulted with for this report. Would you be interested in being included in this list?
- With your permission, we would like to also record this session to ensure that we capture the key information from this meeting, and then delete it when we have completed our notes. Is this acceptable to you?

Research question

Our questions focus generally on Infection Prevention and Control (IPAC) in long-term care (LTC):

In OECD countries that have implemented best practices/standards for COVID-19 infection prevention and control (IPAC) in long-term care facilities (LTCF): (1) What were the 3-5 best practices for IPAC? (2) How were these IPAC best practices implemented (i.e. what supports/tools/methods were used to encourage adoption)? (3) What steps were put in place to ensure compliance with IPAC over time so as to meet performance expectations? (i.e. What measures/systems/processes increased adherence to best practices/standards?)

Interview questions

A. This question is about your background.

1. Can you briefly summarize your expertise in LTC?

B. These questions are about the structure of your long-term care system.

2. How is long-term care structured and organized in your country?
 - a. How common is it for older adults to live in long-term care facilities or other residential/congregate care settings?
 - b. What supports are available for older adults who wish to 'age in place' in their own homes (or with family and/or friends) and in their own communities?
 - c. Which level of government sets the quality and safety standards for LTC facilities?
 - i. e.g., national/central government or by sub-national/regional governments?
 - d. Who funds long-term care services?
 - e. Who owns the long-term care facilities themselves?
 - i. e.g., public, private not-for-profit, private for-profit;
 - ii. Approximately what is the proportion of each?

C. These questions are about the impact of the pandemic on long term care.

3. How has the COVID-19 pandemic impacted long-term care in your country?
 - a. How many resident deaths in LTC in each wave?
 - b. How many staff deaths in LTC in each wave?

D. These questions are about 'best practices' for IPAC in LTCF.

4. What 'best practices' in IPAC were implemented in long-term care facilities to reduce the spread of COVID-19?
 - a. 'Best practice' could include interventions, steps, measures, processes, investments, programs, policies.
 - i. e.g., mandatory masking, visitor policies, IPAC specialist, cleaning, cohorting, staffing changes/efforts to increase retention, paid sick leave, vaccination, building infrastructure changes like improved ventilation or reduced number of residents per room, visitor policies, more home support rather than moving to LTCF, inspections, regulations
5. Which 3-5 'best practices' have been most effective at reducing COVID-19 spread ('biggest bang for the buck')?
 - a. What has made these practices effective?
 - b. Do you know of any published or unpublished reports/data about the *efficacy* of these practices?

E. These questions are about tools/methods/adoption supports that enabled implementation of 'best practices' in IPAC LTCFs.

6. Which tools/methods/adoption supports incentivized implementation of IPAC ('carrots')?
7. Which tools/methods/adoption supports disincentivized implementation of IPAC ('sticks')?
 - a. Which level of government or agency was responsible for implementing 'best practices' IPAC?
 - b. Which implementation tools/tricks do you think were most effective in encouraging adoption of 'best practices' in IPAC?
 - c. Were there any barriers to implementation?

F. These questions are about ongoing compliance with 'best practices' in IPAC over time.

8. How have LTC facilities ensured ongoing compliance *over time* with best practices in IPAC?
 - a. Are there any carrots (Incentives) or sticks (disincentives) that continue to promote adherence?
 - i. How effective have these measures been at ensuring ongoing compliance?
 - b. Who is accountable for ensuring ongoing compliance and to whom are they accountable?
 - c. Are you aware of any published evidence or unpublished key documents supporting the effectiveness of these measures?

G. These are the last questions.

9. If you were in charge of IPAC for your country, what would you do differently to reduce the spread of COVID-19 among older adults living in long term care facilities or receiving support at home?
10. Can you point to any other key documents that identify standards or best practices (available in English?) and/or published studies that could serve as useful reference material for this report?
11. Is there anything else you'd like to say?

Appendix 2: Consultations

Jennie Johnstone, MD PhD FRCPC
Physician Co-Lead, Infection Prevention and Control
Sinai Health System
Assistant Professor, Laboratory Medicine and Pathobiology and
Dalla Lana School of Public Health
University of Toronto

Florien Kruse, PhD
Postdoctoral Researcher
Scientific Centre for Quality in Healthcare (IQ healthcare)
Radboud University Medical Centre, Radboudumc
Nijmegen, Gelderland, Netherlands

Isobel Mackenzie
BC Seniors Advocate
Office of Seniors Advocate of British Columbia
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Paula Rochon, MD MPH FRCPC
Senior Scientist, Women's College Research Institute
Professor, Institute of Health Policy, Management and Evaluation, University of Toronto
Retired Teachers of Ontario Chair in Geriatric Medicine, University of Toronto
Senior Scientist, ICES

Lisa van Tol, MSc PhD (Candidate)
Universitair Netwerk voor de Care-sector Zuid-Holland (UNC-ZH) - Covid-19 in long-term care
Leiden University Medical Center, Department of Public Health and Primary Care
<https://www.lumc.nl/org/unc-zh/>

Appendix 3: Sources and Search Strategy

Databases

COVID-Specific resources

- LitCovid
- WHO COVID-19 Global Literature
- CIHI-Covid collection
- COVID-Evidence
- COVID-END

Clinical Practice Guidelines resources

- CPG Infobase
- ECRI Institute
- NICE Guidance

Knowledge Synthesis Databases

- Health Systems Evidence
- Agency for HealthCare Research & Quality EPC Evidence-based reports
- TRIP

Grey Literature Sources

- Care Quality Commission UK Reports
- LTC Responses to COVID-19 by the International Long-Term Care Policy Network
- Google Custom Search for International Government

Pre-print Repositories

- Medrxiv

Search terms

Concept	Search terms
Long-term care	long-term home, long-term care home, nursing home, long term care, aged care home, residential facility, LTC, LTCF
Infection Prevention and Control	infection control, infection prevention, personal protective equipment, PPE, hand hygiene, cleaning, IPC, IPAC,
Best practice	Best practice, practice, standard, protocol, guideline, guidance
Adoption	Adoption, tools, supports, implementation, support systems
Compliance	Compliance, adherence, incentives, disincentives, checklists, audit and feedback, clinical decision, reminders, mentoring, academic detailing, change agent, clinical champion, COP, learning, communications

Example:

Database: LitCOVID

Search string:

((infection control OR infection prevention OR PPE OR hand hygiene OR cleaning OR personal protective equipment OR IPC OR IPAC) AND (best practice*) AND (long-term home* OR long-term care home* OR nursing home OR long term care OR aged care home* OR residential facilit*) AND (adopt*))

Results: 56