



OECD Health Working Papers No. 121

The economics of patient
safety Part III: Long-term
care: Valuing safety for the
long haul

**Katherine de Bienassis,
Ana Llana-Nozal,
Nicolaas S. Klazinga**

<https://dx.doi.org/10.1787/be07475c-en>

Unclassified

English text only

10 September 2020

**DIRECTORATE FOR EMPLOYMENT, LABOUR AND SOCIAL AFFAIRS
HEALTH COMMITTEE**

Health Working Papers

OECD Health Working Paper No. 121 The Economics of Patient Safety Part III: Long-Term Care

Valuing safety for the long haul

Katherine de Bienassis,* Ana Llana Nozal,* and Niek Klazinga*

JEL classification: I11, I14, I18

Authorised for publication by Stefano Scarpetta, Director, Directorate for Employment, Labour and Social Affairs

(*) OECD, Directorate for Employment, Labour and Social Affairs, Health Division.

All Health Working Papers are now available through the OECD Website at
<http://www.oecd.org/els/health-systems/health-working-papers.htm>

JT03465155

The Economics of Patient Safety Part III: Long-Term Care

Valuing safety for the long haul



OECD Health Working Papers

<http://www.oecd.org/els/health-systems/health-working-papers.htm>

OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the author(s).

Working Papers describe preliminary results or research in progress by the author(s) and are published to stimulate discussion on a broad range of issues on which the OECD works. Comments on Working Papers are welcomed, and may be sent to health.contact@oecd.org.

This series is designed to make available to a wider readership selected health studies prepared for use within the OECD. Authorship is usually collective, but principal writers are named. The papers are generally available only in their original language – English or French – with a summary in the other.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Note by Turkey:

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

© OECD 2020

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for commercial use and translation rights should be submitted to rights@oecd.org.

Acknowledgements

The work presented here was undertaken by the OECD to provide a background report for the fourth Global Ministerial Summit on Patient Safety in Montreux, February 2020, which was postponed due to the COVID-19 crisis.

The work was enabled by a financial contribution from the Ministry of Health of Germany (BMG). The authors would especially like to acknowledge Dr. Christian Berringer and Dr. Ingo Härtel for their input and support.

This work was coordinated and authored by the OECD, including, Katherine de Bienassis, Ana Llana Nozal, and Niek Klazinga. Chapter 2 was authored by Katherine de Bienassis, Michael Mueller, and Emily Bourke. Chapter 3 was authored by Ana Llana Nozal and Katherine de Bienassis. Chapter 4 was authored by Katherine de Bienassis, Eliana Barrenho, Cristian Herrera, and Mircha Poldrugovac. We are grateful to Doris Grinspun, Megan Bamford, Shanoja Naik, and Stephanie Voong who authored Box 2.4 and 4.2 and Karen Born, who authored Box 4.1. Ane Auraaen coordinated the early stages of the report and created the original outline. The authors are also very grateful to Ian Brownwood, Tiago Cravo Oliveira Hashiguchi, Luke Slawomirski, Doris Grinspun, and Ane Auraaen for the valuable input and suggestions.

We are also grateful to Mamiko Yokoi-Arai and Yael Regev (OECD, Directorate for Financial and Enterprise Affairs) whose research is displayed in Figure 2.4.

We would also like to thank Frederico Guanais, Francesca Colombo, and Mark Pearson for their feedback and support and Duniya Dedeyn for administrative support.

Abstract and Key Points

- Long-term care (LTC) institutions are now providing care to **a greater number of people** (25 million across OECD countries), **and more residents with chronic conditions and multiple co-morbidities, than ever before**. This has put an enormous strain on LTC systems—a strain that is projected to increase in the coming years as OECD populations continue to age.
- **Spending on long-term care is rising rapidly—with public expenditure on LTC expenditure on track to increase by over 70% over the next 50 years, totaling 2.7% of GDP in 2070**. Demands on the system have led to significant increases in LTC spending, which is now one of the fastest growing spending area of the health sector.
- The total cost of avoidable admissions to hospitals from LTC facilities in 2016 was almost **USD 18 Billion¹**, according to an analysis using data from 25 OECD countries. **This figure is equivalent to 2.5% of all spending on hospital inpatient care or 4.4% of all spending on LTC**. If nothing changes, and taking into account population and demographic changes, **this figure is set to rise to almost USD 22 Billion² by 2030—an almost 20% increase in the coming decade**.
- Research shows that **over half of the harm that occurs in LTC is preventable, and over 40% of admissions to hospitals from LTC are avoidable**. The root causes of these events can be addressed through improved prevention and safety practices and workforce development—including skill-mix and education.
- **Targeted investments** in even a limited number of key areas can have a significant impact by mitigating the main cost drivers of adverse events in LTC. Governments should implement **appropriate quality standards and standards for staffing levels and competencies** to match the needs of LTC residents.
- **The ever increasingly important links to acute care—such as transfers, acute admissions and rehabilitation services before returning back to LTC — cannot be ignored**. Governance reform is required to ensure sufficient resources and effective planning of care across the transitions of acute and LTC.
- There are huge opportunities for LTC to transition into **learning systems**, with a focus on prevention and risk assessment over response. LTC can learn from efforts in the acute care sector to **foster strong patient safety cultures**, which in turn enable staff to consistently deliver safe and high quality care services.
- An **inclusive approach** towards risk management is essential. LTC residents and their family should be partners in risk management and decisions on balancing safety risks with a personalized living environment.

¹ 17,740.5 US Dollar, Millions, Current prices, current PPPs

² 21,836.1 US Dollar, Millions, Current prices, current PPPs

Executive Summary

The unique context of long-term care

1. A fundamental shift is underway in care provision for older populations, with LTC increasingly taking on care provision that was traditionally delivered in hospitals. As OECD populations are rapidly aging, there has been increasing demand on the LTC sector to provide care for more, and older people, with complex conditions and heightened needs for expert care. Currently, 58% of adults aged 65 or over report living with two or more chronic diseases, with this figure rising over 70% in many OECD countries. Simultaneously, trends in LTC focus on substitution of care settings from nursing homes and residential care towards home care and supporting older persons to live on their own or with family as long as possible.

2. The significant safety risks presented in hospital care are amplified in LTC. Long-term care facilities – in the traditional conception – have a broader scope of care than hospitals and the care of residents requires careful consideration of their rights and responsibilities in their own home, rather than the more stringent oversight of the medical paradigm in hospitals. This creates unique challenges regarding risk and safety, especially when trends and cost pressures enforce substitution from specialized settings and professionals towards home settings and informal care. Here, people remain in the setting for long-periods, increasing their exposure to a safety incident. They receive care from workers who in many cases are less skilled than in the hospital sector and less able to provide some of the health care interventions of a more medical nature. Preventable safety failures are endemic to the LTC environment: falls, pressure injuries, inappropriate use of benzodiazepines and polypharmacy, overuse of restraints, and infections are key examples. Finally, the setting must balance these complex medical requirements with humanization—understanding that for residents of LTC facilities, this is their home.

Financing and governance are levers policy makers can use to improve safety in LTC

3. **Spending on long-term care is rising rapidly—with public expenditure on LTC expenditure on track to increase by over 70% over the next 50 years, totaling 2.7% of GDP by 2070.** Demands for care have led to significant increases in LTC spending, which is now one of the fastest growing spending item of the health sector. Low investment in the sector and lack of standards expose the system to risks that compromise safety and quality of care. For example, this may result in less trained nursing and care staff working in the sector, at the same time that the acuity, as well as the complexity and intensity of required care necessitates higher skill levels. The public appeal to set safety standards may rise whilst at the same time further personalization and “humanisation” of care services is asked for.

4. A balanced governance approach is needed, particularly in this setting where there is significant provision of care from both public and private providers. Inadequate standards and investment may lead to increasing costs of safety events, both within LTC or admissions to hospital or other acute care settings. By aligning responsibility and authority of long-term care providers, financial and other incentives can be more effectively applied to improve care safety.

Investing in health care workforce can improve patient safety

5. **Sufficient and adequately trained health care workforce is one of the most pressing issues faced by the sector today.** Shortages of workers are not the only problem. The services delivered in LTC and the knowledge, competencies and skills of those who provide them are often misaligned. While the health profile and dependency of LTC recipients has been changing, the workforce mix and level has remained relatively unregulated and static. There is now a dangerous gap between care needs (demand) and human resources (supply) at all levels, including capacity, competences and skill-mix.

6. In today's environment, where many LTC facilities deliver services previously found only in hospitals, investment in an appropriately skilled workforce is pivotal to ensuring the safety of residents. While investments in workforce come at a cost, they have been proven to reduce spending in LTC and also in hospitals, which comes at a much higher price. It is pivotal to look at inadequately resourcing and equipping LTC as also in relation to savings for the whole health system--in particular its relationship with hospital care.

Addressing safety risks and adverse events specific to LTC settings improves outcomes and reduces costs

7. **Reducing and preventing harm in LTC is an end in itself, but there is also an economic case to be made.** Preventable safety failures are endemic to the LTC environment: falls, pressure injuries, inappropriate use of benzodiazepines and polypharmacy, overuse of restraints, and infections are key examples. But related and in addition to these manifestations of unsafe care, the vulnerability and dependency of people in long-term care exposes them to systemic neglect and abuse—especially in the context of inadequate human resources. All LTC residents are exposed to one or more of these risks, and a large majority will experience some level of harm over the course of their stay in LTC.

8. The harm resulting from these risks has significant human, financial, and political costs. Findings from this report calculate that the total cost of avoidable admissions due to safety lapses to hospitals alone from LTC facilities in OECD countries was almost USD18 Billion in 2016. This figure is equivalent to 2.5% of all spending on hospital inpatient care or 4.4% of all spending on LTC. Yet, **most of this harm is preventable**, and the root causes of these events can be addressed through improved prevention and safety practices. Improvements, in even a limited number of key areas, can have a significant impact by mitigating the main cost drivers of adverse events in LTC.

The way forward for improving patient safety in long-term care

9. Safety in nursing homes has received less attention than hospitals but as demand for aged care rises and the hospital sector relies more and more on care in the community, the structures, processes and incentives for safety in nursing homes will gain greater policy importance. The warning signs of challenges ahead for the LTC sector are clear. Not only will the demands for LTC increase, so will the expectation that care is safe, from family members and the community at large.

10. As the needs and demands on this sector grow, and the nature of required long-term care services become more complex, so must the regulation, funding and workforce that support people receiving long-term care. Countries can take the following actions to improve LTC outcomes and improve the efficiency of spending on LTC services.

- **Establishing and enforcing standards for quality of care:** Governments have a key role to play in ensuring that the systems in place do not harm the residents of LTC facilities. Safety standards should be developed and enforced to ensure that minimum standards are met with regard to employment (staff ratios and qualifications), infrastructure, living environment and quality outcomes.
- **Funding prevention over response:** Financing trends show that spending in LTC is increasing, with significant amounts of funding coming from both the public and private sectors. More could be done to implement policies that prioritize safety mechanisms based on learning and risk assessment, expanding on current policies that respond to the safety lapses only after an adverse event occurs.
- **Regulation of staffing levels and competencies:** The population of nursing homes has been notably dynamic in recent decades, which has created risk exposure for persons who live in LTC facilities without appropriately matched staff. Policy efforts should be designed in order ensure that there are appropriate staffing levels for the management of medical complex nursing home residents.
- **Transitioning LTC into a learning system, with a focus on safety culture:** Staff of all levels should feel empowered to document safety issues, suggest process improvements, and feel responsibility for facility outcomes. Creating a good work environment for health care employees and improving people's quality and safety of care are mutually reinforcing efforts. Fostering a culture of patient safety is intimately linked to the healthy work environments that enable staff to consistently deliver high-quality and safe care services.
- **Realizing an inclusive approach towards safety:** Culture and learning systems can only be effective when they are set up in an inclusive way. Hence, the involvement of nursing home residents and their family in the efforts to mitigate risks is essential. To achieve the right balance between risk-control and a personalized environment for residents, a continuous dialogue about safety approaches is key.
- **Addressing the root causes of safety lapses:** To address the economic burden of safety lapses in LTC, policy makers need to make targeted investments that address the root causes of these safety risks, by investing in policies that will increase staffing, communication, quality improvement, and better coordination with the acute care sector. Targeted investments in best practices to reduce common adverse events and safety risks, such as improved staff education, hygiene, and medication review, are also needed.

Résumé

Le secteur des soins de longue durée et la sécurité

1. Un changement de fond est en train de s'opérer dans la prise en charge des populations âgées, le secteur des soins de longue durée (SLD) prenant de plus en plus le pas sur la prise en charge hospitalière. Face au vieillissement des populations dans les pays de l'OCDE, le secteur des SLD doit gérer des personnes plus nombreuses, plus âgées, présentant des pathologies complexes et nécessitant des soins renforcés et plus spécialisés. Actuellement, 58 % des adultes de 65 ans et plus déclarent souffrir d'au moins deux pathologies chroniques, pourcentage qui dépasse 70 % dans de nombreux pays membres. Parallèlement, la tendance, dans le secteur des SLD, consiste à remplacer les établissements médicalisés et les établissements de soins avec hébergement par une prise en charge à domicile et des services d'aide permettant aux personnes âgées de vivre seules ou avec leur famille le plus longtemps possible.

2. Les risques pour la sécurité déjà présents à l'hôpital ne font que s'amplifier dans le secteur des SLD. Les structures de soins de longue durée – au sens classique du terme – prodiguent un éventail de soins plus large que les hôpitaux et la prise en charge des résidents exige de bien prendre en considération leurs droits et leurs responsabilités dans leur propre domicile, contrairement au périmètre plus strict de la surveillance médicale à l'hôpital. De cette situation découlent des difficultés particulières en termes de risques et de sécurité, notamment dans la mesure où l'évolution et la pression des coûts incitent de plus en plus à remplacer les structures spécialisées et les professionnels par des soins à domicile et des aidants informels. Les personnes dépendantes restent dans les structures de SLD pendant de longues périodes, où elles s'exposent à des risques accrus pour leur sécurité. Elles reçoivent des soins de travailleurs qui, en grande majorité, sont moins qualifiés que les personnels hospitaliers et moins à même d'effectuer certaines interventions de nature plus médicale. Les défaillances de sécurité évitables sont endémiques dans le secteur des SLD : chutes, escarres, mésusage des benzodiazépines et de la polymédication, surutilisation des moyens de contention ou encore infections figurent parmi les exemples les plus marquants. En définitive, il convient, dans les structures de SLD, de trouver le bon équilibre entre respecter des exigences médicales complexes et faire preuve d'humanité, autrement dit bien comprendre que ces structures tiennent lieu de maison à leurs résidents.

L'impact du financement et de la gouvernance sur la sécurité dans le secteur des SLD

3. **Les dépenses du secteur des SLD enregistrent une augmentation rapide – laquelle devrait atteindre près de 60 % au cours des 50 prochaines années.** Les exigences auxquelles le système est confronté entraînent une hausse importante des dépenses du secteur des SLD, dont le développement est l'un des plus rapides du secteur de la santé. Cependant, les mesures de maîtrise des coûts exposent le système à des risques en termes de sécurité des patients et de qualité des soins. Ainsi, les efforts faits pour contenir les coûts peuvent avoir pour conséquence le recrutement de personnel infirmier moins cher mais moins qualifié, alors même que la complexité et l'intensité des soins nécessaires exigent des niveaux de qualification plus élevés. Le grand public pourrait ainsi exiger plus de normes de sécurité

alors que dans le même temps, des efforts supplémentaires de personnalisation et d'« humanisation » des services sont nécessaires.

4. Une approche équilibrée de la gouvernance est requise, en particulier dans ce contexte, où une part significative des soins est assurée à la fois par des prestataires publics et privés. Les économies tirées de la maîtrise des coûts risquent d'être effacées par la hausse du coût de la sécurité, tant dans le secteur des SLD qu'à l'hôpital ou dans d'autres services de soins aigus. L'harmonisation des responsabilités et de l'autorité des prestataires de soins de longue durée permettrait d'appliquer plus efficacement les incitations, entre autres, financières à même d'améliorer la sécurité des soins.

L'offre et le personnel dans le secteur des SLD

5. **Une main-d'œuvre suffisamment nombreuse et qualifiée constitue l'un des problèmes les plus pressants du secteur des SLD aujourd'hui.** Les pénuries de personnel ne sont pas le seul problème ; les soins dispensés ainsi que les connaissances, les compétences et les qualifications de ceux qui les dispensent ne sont pas adaptés. Alors que le profil des résidents en termes d'état de santé et de dépendance est en train de changer, la composition des personnels et les niveaux de qualifications demeurent relativement statiques et peu réglementés. On constate désormais un décalage dangereux entre les besoins de soins (la demande) et les ressources humaines (l'offre) à tous les niveaux, notamment en termes de capacités, de compétences et de combinaison des compétences.

6. Dans le contexte actuel, où de nombreuses structures de SLD proposent des services autrefois prodigués uniquement à l'hôpital, il apparaît essentiel d'investir dans une main-d'œuvre correctement qualifiée pour garantir la sécurité des résidents. Malgré le coût que cela représente, un investissement de la sorte permet de réduire les dépenses dans le secteur des SLD mais aussi les dépenses hospitalières, lesquelles sont bien plus élevées. Il est indispensable d'examiner les dépenses de SLD au regard des économies réalisées sur les ressources humaines et des économies connexes sur les plans humain, politique et financier, ainsi que des économies que cela représente pour l'ensemble du système de santé – en particulier les services hospitaliers.

Réduire le poids économique des risques pour la sécurité et des événements indésirables propres aux structures de SLD

7. **Réduire et prévenir les dommages liés aux soins de longue durée constitue une fin en soi, mais la question économique est également importante.** Les défaillances de sécurité évitables sont caractéristiques des SLD, qu'il s'agisse par exemple de chutes, d'escarres, de mésusage des benzodiazépines et de la polymédication, d'une surutilisation des moyens de contention ou encore d'infections. Cependant, outre les risques pour la sécurité des patients que peuvent comporter les soins, la vulnérabilité et la dépendance des personnes âgées exposent ces dernières à des négligences et abus systémiques, notamment dans le contexte de ressources humaines inadaptées. Tous les résidents des structures de SLD sont confrontés à un ou plusieurs de ces risques, et une large majorité d'entre eux subira un certain nombre de préjudices au cours de son séjour.

8. Les dommages résultant de ces risques ont des coûts humains, financiers et politiques importants. Les résultats du présent rapport montrent que, dans les pays de l'OCDE, le coût total des hospitalisations évitables dues à des défaillances de sécurité dans les seules structures de SLD s'élevait à près de 18 milliards USD en 2016, soit 2.5 % de l'ensemble des

dépenses d'hospitalisation et 4.4 % des dépenses de SLD totales. Pourtant, **la plupart de ces dommages sont évitables** et les causes premières de ces événements peuvent être corrigées par des mesures de prévention et de sécurité renforcées. Des améliorations, même si elles ne concernent qu'un nombre limité de domaines essentiels, peuvent avoir un impact significatif en atténuant les principaux déterminants des coûts des événements indésirables en matière de SLD.

Améliorer la sécurité des patients en soins de longue durée : conclusions et recommandations

9. La sécurité dans les établissements médicalisés reçoit moins d'attention que celle des hôpitaux, mais à mesure que la demande augmente et que le secteur hospitalier s'appuie de plus en plus sur les services de proximité, les structures, processus et incitations en matière de sécurité dans les établissements médicalisés vont gagner en importance. Les signes annonciateurs des défis à venir dans le secteur des SLD sont clairs : la demande dans ce domaine va s'accroître en même temps que les exigences des proches et de la société dans son ensemble en matière de sécurité des résidents.

10. L'évolution des besoins et des attentes dans le domaine des SLD ainsi que de la nature des soins prodigués doit s'accompagner d'une évolution parallèle de la réglementation, du financement et des professionnels chargés des personnes dépendantes. Les liens de plus en plus étroits avec les services de soins aigus ne peuvent être ignorés. Il est nécessaire de réformer la gouvernance pour garantir des ressources suffisantes et une planification efficace des soins lors du passage entre soins aigus et soins de longue durée. Les systèmes de santé sont encouragés à adopter des mesures favorisant un passage de relais efficace entre les différents services compte tenu des implications qu'un manque de sécurité des soins pose pour les deux secteurs, en amont comme en aval.

11. Il est essentiel de bien comprendre les déterminants économiques de la sécurité des patients dépendants pour pouvoir investir là où c'est nécessaire et obtenir ainsi des systèmes de santé hautement performants et durables assurant la sécurité des patients et la satisfaction de ces derniers et de leurs familles. Les coûts économiques du secteur des SLD sont moins étudiés, mais il y a tout lieu de penser qu'ils représentent une part importante des coûts du secteur de la santé dans son ensemble, notamment au niveau des transferts, des admissions en soins aigus et des services de rééducation avant le retour en structure de SLD. Bien que les établissements médicalisés présentent des caractéristiques particulières, au sens où ce ne sont pas des hôpitaux mais des lieux de résidence, des éléments fondamentaux similaires existent dans la mesure où ces établissements doivent disposer de structures de soins aigus.

12. La taille, les capacités et les compétences de la main-d'œuvre sont au cœur du problème – les gouvernements vont devoir appliquer des normes adaptées en matière d'effectifs et de compétences. Il est possible de renforcer la direction et la culture, mais en l'absence de capacités suffisantes, l'amélioration de la sécurité restera limitée. Des efforts supplémentaires pourraient être faits pour mettre en œuvre des mesures accordant la priorité aux mécanismes de sécurité en incitant à renforcer les capacités, à évaluer les risques et à élargir le périmètre des systèmes de contrôle actuels sur la base des erreurs commises. Passer du coût des défaillances à celui de la prévention nécessite de se placer dans une perspective systémique globale, à travers laquelle le fonctionnement des établissements médicalisés du secteur des SLD est considéré en parallèle et en interaction avec les services de soins aigus et les services sociaux.

Table of contents

The Economics of Patient Safety Part III: Long-Term Care	2
OECD Health Working Papers	3
Acknowledgements	4
Executive Summary	6
Résumé	9
Acronyms	16
Introduction	17
1 What is unique about LTC in the safety context?	18
1.1. The needs for those receiving LTC is shifting	18
1.1.1. The populations of OECD Countries are aging	18
1.1.2. The needs of those in in LTC are increasingly complex	20
1.1.3. Maintaining autonomy while minimizing risk is a challenging balance for LTC institutions	22
1.1.4. LTC environment is changing for both LTC recipients and LTC providers and the settings in which care is provided	23
1.2. The unique context of long-term care	23
1.2.1. The LTC context is unique for its role in the health care system	23
1.2.2. LTC and acute care can no longer be seen in isolation from each other	24
1.2.3. LTC has strong linkages with social care	25
1.3. The economics of patient safety in long-term care	26
1.3.1. Patient harm in LTC is a not only a source of human suffering but also of wasteful spending	26
1.3.2. Flexible approaches are needed to improve safety and prepare countries' LTC provision to care for the ageing population	27
1.3.3. Improving safety must be considered in the context of Quality of Life	27
1.3.4. Previous OECD work on the economics of patient safety	27
1.3.5. Economics of safety in the context of LTC	29
2 The impact of financing and governance on safety in long-term Care	31
2.1. Financing models	31
2.1.1. Overview of common LTC financing models and sources	31
2.1.2. Provider payment mechanisms influence how care is provided	34

2.1.3. Private LTC Market for insurance is small, but private providers are common	34
2.1.4. Public LTC provision and coverage, funding, and staffing models	35
2.2. Governance and incentive structures	36
2.2.1. Effectiveness of governance models through national standards and quality incentives	36
2.2.2. Incentives to coordinate care across settings have potential to improve quality and safety of LTC services but are not common	40
2.2.3. Legal protections for individual autonomy have been implemented through national legislation	43
2.2.4. Optimal uptake of technology could be further explored to improve LTC service delivery	44
2.2.5. Political leadership can be a driving force for improving safety in LTC	44
2.2.6. Organizational leadership and culture at the institutional level are key inputs to a safe LTC environment	45
2.2.7. The way forward for governing for safety in LTC	46
3 LTC provision and workforce	47
3.1. Overview of complexities of LTC provision	47
3.1.1. Trends in settings of care have led to changes in the profiles of both patients and caregivers	47
3.2. Skills and competencies of the LTC workforce	50
3.2.1. Private care provision is poised to take on a bigger role in LTC delivery	51
3.2.2. Informal care is a large source of care for LTC needs	51
3.3. Working conditions in LTC, health and safety of workers	52
3.4. There is an expected shortage of LTC workers due to demographic trends	53
3.5. Leadership, technology and patient safety culture have staffing impacts	55
3.6. Investing in health care workforce to improve patient safety	56
4 Economics of safety in LTC: Addressing the economic burden of safety risks and adverse events in LTC settings	58
4.1. Measurement and accountability	58
4.1.1. Patient safety in LTC institutions is often not well measured	58
4.1.2. Epidemiology of safety in LTC institutions shows adverse events and deficiencies are commonplace	59
4.1.3. Older persons are at higher risk for experiencing adverse events	60
4.2. Types, risk and frequency of adverse events in LTC	61
4.2.1. Discussion of common adverse events	61
4.2.2. Pressure injuries	61
4.2.3. Unnecessary antipsychotic use	63
4.2.4. Opioids	65
4.2.5. Polypharmacy	67
4.2.6. Falls	69
4.2.7. Infections and antimicrobial resistance	71
4.2.8. Abuse and neglect	72
4.2.9. Malnutrition	73
4.2.10. Many of the root causes of adverse events are caused by a few, common underlying issues	74
4.2.11. The disease and cost burden of LTC adverse events ranges across the type of adverse events	75
4.2.12. Admissions to hospitals are a key cost driver	76
4.2.13. Estimates of the costs of adverse events in LTC are more than USD 18 billion across OECD countries	76

4.2.14. Financing for prevention in LTC	77
4.2.15. Using policy levers to help lift the economic burden of adverse events in LTC	77
5 The way forward for improving patient safety in long-term care: conclusion and recommendations	79
5.1. Recommendations for addressing the costs of adverse events in LTC	80
5.2. Conclusion	82
References	83
OECD Health Working Papers	100
Recent related OECD publications	101

Tables

Table 2.1. How is LTC publicly financed	33
Table 2.2. Accreditation requirements or uses for LTC	37
Table 3.1. Available types of facilities in six countries	48
Table 3.2 Common hazards faced by workers in LTC	52
Table 4.1. Rationales for Events Determined Preventable in Study of US Medicare Patients	61
Table 4.2. Financial burden due to specific adverse events or conditions (as share of public spending on LTC)	75

Figures

Figure 1.1. The old-age dependency ratio will almost double in the next 35 years on average	19
Figure 1.2. Life expectancy and healthy life years at age 65, by sex, 2017 (or nearest year)	20
Figure 1.3. Disability increases with age	21
Figure 1.4. Adults aged 65 and over rating their own health as fair, bad, or very bad, 2017 (or nearest year)	22
Figure 2.1. Long-term care expenditure (health and social components) by government and compulsory insurance schemes, as a share of GDP, 2017 (or nearest year)	32
Figure 2.2. Reporting of LTC spending components, Average across 32 OECD countries, 2017 (or latest year)	33
Figure 2.3. Fewer respondents are unhappy with public long-term care services in countries that spend more on long-term care	34
Figure 2.4. Care home beds by type of Operator	35
Figure 2.5. Summary of the forms of economic instruments to promote long-term care services across OECD countries	39
Figure 2.6. Care effectiveness and user safety judged to be the highest priority area in quality of LTC in OECD countries, 2012	45
Figure 3.1. Trends in long-term care beds in facilities and hospitals, 2007-17 (or nearest year)	48
Figure 3.2. Long-term care recipients aged 65 and over receiving care at home, 2007 and 2017 (or nearest year)	49
Figure 3.3. Long-term care workers by education level, 2016	50
Figure 3.4. Share of informal carers among population aged 50 and over, 2017 (or nearest year)	51
Figure 3.5. Average gross monthly earning of personal care workers and nurses	53
Figure 3.6. Share of the population aged over 65 and 80 years, 2017 and 2050	54
Figure 4.1. Percentage of long-term care facility residents with at least one pressure ulcer, 2016-17	62
Figure 4.2. Opioid prescriptions across age groups, 2017 (or nearest year)	66

Figure 4.3. Polypharmacy in adults aged 75 and over: primary and long-term care, 2017 (or nearest year)	68
Figure 4.4. Antimicrobial resistance proportion among health care-associated infections in long-term care, 2016-2017	72
Figure 4.5. Groups of adverse events reported (n = 173) to the Health and Social Care Inspectorate (Sweden)	74
Figure 5.1. Key elements for improving safety in primary and ambulatory care at national level	80

Boxes

Box 1.1. Scope of this report	26
Box 1.2. Key Findings from the OECD Economics of Patient Safety Series	28
Box 1.3. Definitions and Concepts	30
Box 2.1. Examples for setting of requirements and minimum standards in long-term care	37
Box 2.2. The development of a skill mix determination tool in Germany	38
Box 2.3. Nursing Home Five-Star Program in the US	39
Box 2.4. Registered Nurses' Association of Ontario Quality Indicators for reporting and evaluation	42
Box 4.1. Reducing unnecessary antipsychotic use in long-term care in Alberta, Canada	65
Box 4.2. The economic impact of fall prevention guidelines in Ontario	69

Acronyms

ADE	Adverse Drug Event
ADL	Activities of Daily Living
AHRQ	Agency for Healthcare Research and Quality
AMR	Antimicrobial resistance
BPG	Best Practice Guidelines
CAP	Capitation
CASPER	Certification and Survey Provider Enhanced Reporting
CIHI	Canadian Institute for Health Information
CMS	Centers for Medicare and Medicaid Services (United States)
DRM	Disease related malnutrition
IADL	Instrumental Activities of Daily Living
HAC	Hospital Acquired Condition
LTC	Long-Term Care
LTCH	Long-Term Care Hospitals (United States)
NHS	National Health Service (United Kingdom)
OIG	Office of the Inspector General (United States)
P4P	Pay for Performance
PI	Pressure Injury
PMI	Potentially inappropriate medication
PS	Patient Safety
PSC	Patient Safety Culture
QoL	Quality of Life
RACF	Residential Aged Care Facility (Australia)
RNAO	Registered Nurses' Association of Ontario
SNF	Skilled Nursing Facility

Introduction

13. Long-term care (LTC), which helps people live as independently and safely as possible as they age, has been particularly vulnerable to the COVID-19 crisis. To date, the bulk of COVID-19 deaths are among the elderly, especially those over 80, who represent 50% of those receiving LTC. Findings from 13 European countries found that, on average, over a third of all COVID-19 deaths were LTC residents (OECD, 2020^[1]). The actual numbers may be higher, as many LTC residents have not been tested.

14. COVID-19 has made evident the widespread safety failures in LTC. These high death tolls have awakened many to a lack of appropriate safety standards, practices, and resources in LTC settings.

15. Residents in LTC facilities often have compromised immune systems or chronic conditions that place them at heightened risk of infection, especially, but not only, during the COVID-19 crisis. Close proximity and constant contact of residents with health care staff and other residents can facilitate the spread of respiratory and other infections. As a result, even before the COVID-19 crisis hit, health care-associated infections were common in LTC – averaging a prevalence of 3.8% among LTC facility residents in OECD countries in 2016-17 (OECD, 2019^[2]).

16. While at the time of writing this report, COVID-19 had not yet emerged, it was already apparent that LTC was vulnerable.

17. COVID-19 has unfortunately brought to light the challenges faced in ensuring safe LTC—and the vulnerabilities and human costs associated with the status quo. Poor safety and high rates of adverse events in LTC are in part due to lack of resources in part due to inadequate protocols, skills and processes: access to appropriate staffing, supplies, and treatments can pose a challenge for the delivery of safe and quality LTC. The root causes of most safety events can be addressed through improved prevention and safety practices and workforce development – including promoting training for more advanced qualifications and/or specific certification among some staff.

18. With the spotlight on LTC, policymakers have an opportunity to address and improve safety in this setting. This report offers actionable recommendations to inform improvement efforts—including the need for appropriate quality standards and standards for staffing levels and competencies to match the needs of LTC residents, better linkages with acute care, and improving organizational learning and safety culture in LTC.

1 What is unique about LTC in the safety context?

19. There is a fundamental shift underway in care provision for older populations. As OECD populations are rapidly aging, there has been increasing demand on the LTC sector to provide care for more, and older, persons with complex conditions and heightened care needs. Currently, **58% of adults, aged 65 or over report living with two or more chronic diseases**, with this figure rising over 70% in many OECD countries.

20. As such, LTC has increasingly been taking on care provision that has traditionally been delivered in hospitals. Simultaneously, trends in LTC focus on substitution of care settings from nursing homes and residential care towards home care and supporting older persons to live on their own or with family, as long as possible. But nursing homes are not hospitals and the care of residents requires careful consideration of their rights and responsibilities as this is the residents home, rather than the more stringent oversight of the medical paradigm in hospitals. More so than in other health care settings, **personalization of the care environment is necessary** to ensure a comfortable environment which respects each individual resident's physical and cognitive needs. However, this heterogeneity of environment creates unique challenges regarding risk and safety. This has been compounded by trends and cost pressures that translate into substitution policies—from specialized settings and professionals—towards home settings and informal care.

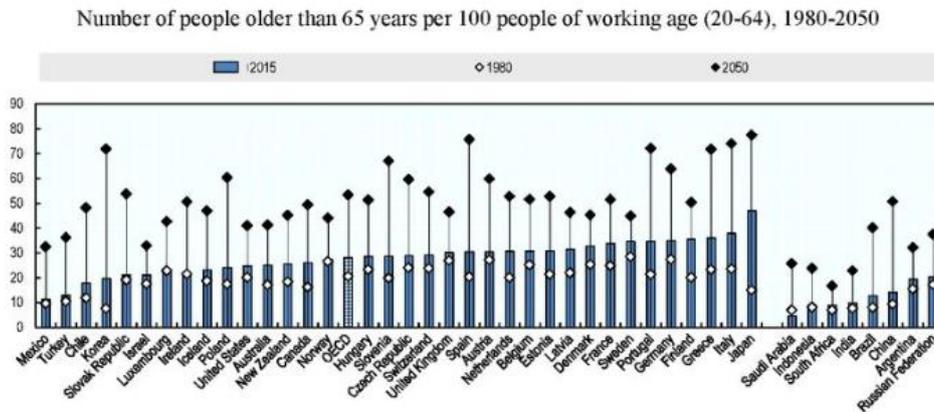
21. The significant safety risks presented in hospital care are amplified in LTC. Here, residents remain in the setting for long-periods, increasing their exposure to a safety incident. Dually, they receive care from workers who are typically less skilled, but are also asked to provide complex, medically oriented care to LTC residents. Understanding the economics of patient safety in LTC is pivotal to driving smart investment to ensure high-performing and sustainable health systems.

1.1. The needs for those receiving LTC is shifting

1.1.1. The populations of OECD Countries are aging

22. The populations of OECD countries are rapidly aging. Findings from the OECD estimate the population over 80-years old in the OECD is projected to double by 2050. Living a long life is becoming the norm. Over the last 70 years, the percentage of men living to be over 70 years old increased by 13 percentage points, for women, the increase was 7 percentage points. Longer life expectancies will lead to larger populations of older people, who will, in turn, require services and assistance as they age. The old-age dependency ratio (the number of people over 65/ the number of people of working age [18-65]) is expected to almost double over the next 35 years (see Figure 1.1).

Figure 1.1. The old-age dependency ratio will almost double in the next 35 years on average



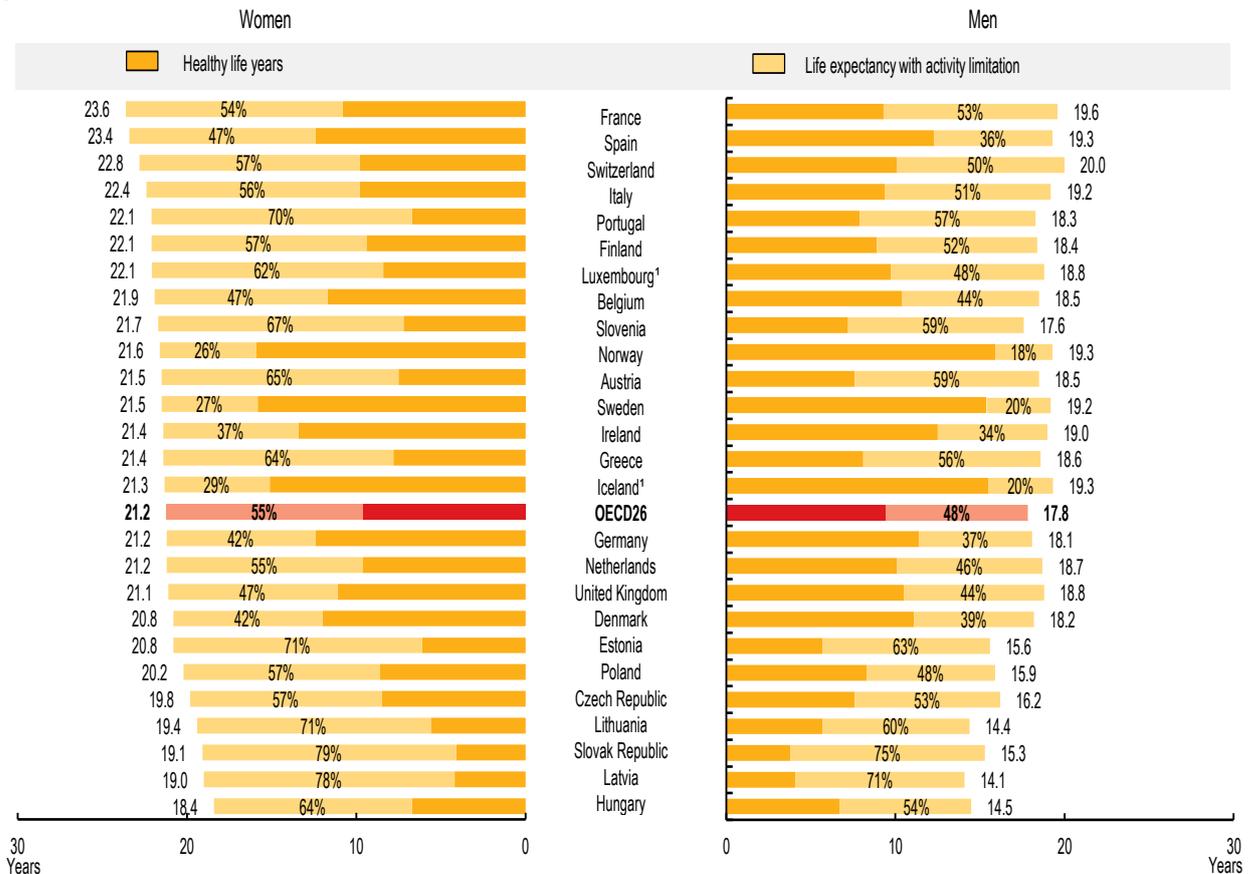
Source: (OECD, 2017^[3])

23. While increased age does not necessarily lead to someone's requirement of additional care, it is correlated with higher levels of poor health and disability. In Britain, over 20% of those age 65 and older, require help to perform personal care tasks (Gori and Fernandez, 2016^[4]). Age is further associated with cognitive impairment. **From 1990 to 2016, the global number of people living with dementia more than doubled** (Nichols et al., 2019^[5]). Currently, a majority of nursing home residents have some kind of cognitive impairment, which creates challenges for caregivers to understand and interpret people's symptoms and needs (Andersson et al., 2018^[6]).

24. All countries have seen marked increases in life expectancy over the last century, but for some countries much of this improvement has been concentrated in the last 30 years. Among OECD countries, Turkey, Korea and Chile have seen the greatest improvements from 1970, with average life expectancy increasing by 24, 20 and 18 years respectively (OECD, 2019^[2]). Countries that have seen a rapid increase in life expectancy over a shorter period of time are likely to experience significant policy pressures to increase service provision in response to these rapid demographic changes.

25. Even more relevant are increases in gains in life expectancy at age 65, which have increased in all OECD countries in recent decades. Between 1970 and 2017, the average life expectancy at age 65 increased across OECD countries, rising by over five years on average (OECD, 2019^[2]). However, not all of these years are likely to be lived in good health. Figure 1.2 demonstrates the variation between countries in life expectancy after age 65 in years lived in good health and life expectancy with activity variation.

Figure 1.2. Life expectancy and healthy life years at age 65, by sex, 2017 (or nearest year)



Note: Note: Data comparability is limited because of cultural factors and different formulations of question in EU-SILC.

1. Three-year average (2015-17).

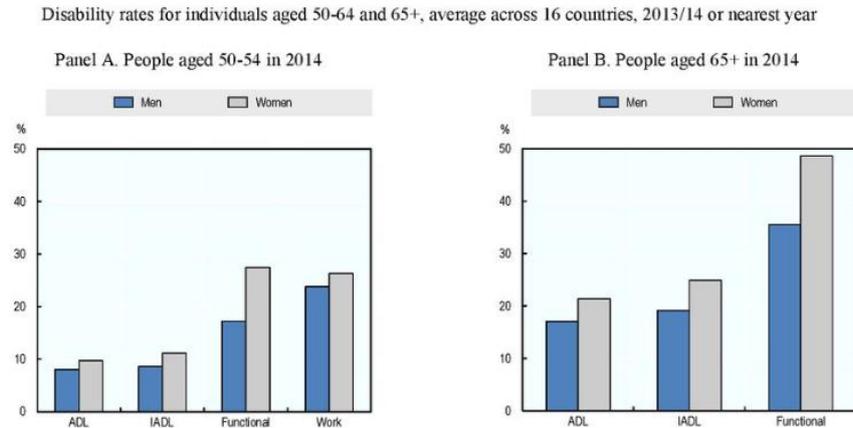
Source: (OECD, 2019^[2])

26. As the population ages, **OECD countries can expect that there will be new patterns of disease and need for LTC services**. Research has already shown that as people age, the likelihood of chronic diseases, and multi-morbidities, also increases. Changing behaviour health related trends, such as those related to diet and obesity, will likely impact LTC provision—as will likely changes in the prevalence of cognitive and mental health disorders.

1.1.2. The needs of those in in LTC are increasingly complex

27. As people age, their likelihood of experiencing a disability also increases (Figure 1.3). As a result, current nursing home populations are older and more disabled than they have been in previous decades, requiring more, and more complex, attention of LTC staff. Findings from the OECD suggest that over 15% of men over 65 report a disability that affects an ADL (activity of daily living). In general, woman report higher rates of disability then men, and there are noted differences in disability due to numerous social and economic factors (OECD, 2017^[3]). Those living with disability often require more intensive care services, including those that help individuals with their basic activities for daily living (ADLs).

Figure 1.3. Disability increases with age



Note: The chart shows age-standardised rates. Age standardisation using the 2005 OECD population. Sampling weights are used. The survey of health and ageing in Japan does not include a question about work participation related to disability. Disability is measured using four self-reported indices: i) at least one limitation in activity of daily living (ADL), ii) at least one limitation restriction in instrumental activity of daily living (IADL), iii) at least one functional limitation related to mobility, and iv) being limited in paid work because of a health problem.

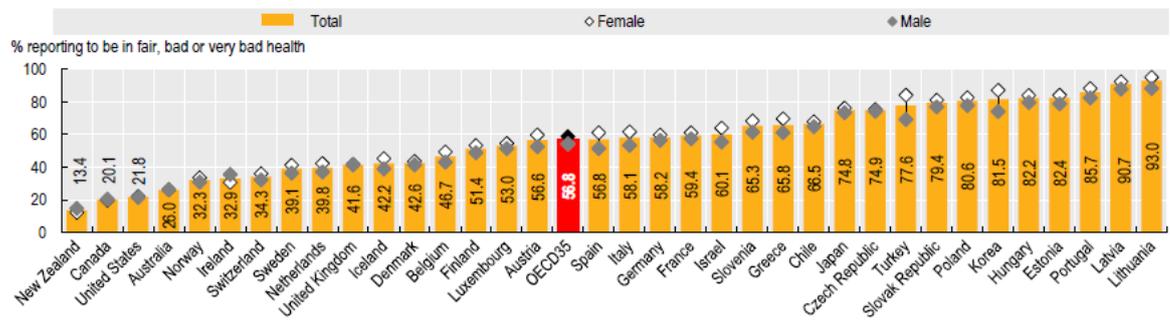
Source: OECD estimates based on SHARE, ELSA, HRS, JSTAR, and CHARLS data.

28. It is well known that people's health typically worsens as they age. Among the entire population at age 20, only 10% report being in bad health. By age 64, more than half of people do not report being in good health (OECD, 2019^[21]). In some countries, over three in four people over age 65 do not believe they are in good health, including Turkey, Slovak Republic, Poland and Korea (OECD, 2019^[21]). This figure passes 90% in Latvia and Lithuania. Multi-morbidity is common among older people— on average across OECD countries, 58% of adults aged 65 or over reported living with two or more chronic diseases, and in Portugal, Poland, Hungary, the Slovak Republic and Germany this figure is 70% or higher (OECD, 2019^[21]).

29. Another factor that makes LTC residents unique is that of decisional capacity. While many in LTC have full capacity to make decisions and to participate actively in their own care, others may be less able to do so due to advanced age, illness, or a decline in cognitive ability. In such cases, older people may be particularly vulnerable to infringements on their personal autonomy (Fjordside and Morville, 2016^[7]). Studies of LTC residents in the U.S. found that residents valued autonomy and independence above preferences for living in home or institutionalized settings (Boisubin, Chu and Catalano, 2007^[8]). Societal changes in family structures and social networks may also influence the availability of social and care support. Reconfigurations of family relations and social networks may have important consequences for social services, welfare and fiscal management (OECD, 2019^[9]).

30. Due to high levels of fragility and disability, the prognosis for LTC recipients is often poor and mortality is high. Recent research has found that in Europe, between 12 and 38% of the oldest people die in a LTC facility. (Honinx et al., 2019^[10]). The study, which included Belgium, Finland, Italy, the Netherlands, Poland and England, found that residents of long-term care facilities currently die at an average of 85 years old, with the exception of Poland where the mean age of death was 81. This research study found that a significant number of studied residents (47–74%) had multiple comorbidities and at least 60% have been diagnosed with dementia. Clinical complications were also found to be prevalent, (51.9% England; 66.4% Finland and Poland), primarily relating to issues of eating or drinking (Honinx et al., 2019^[10]).

Figure 1.4. Adults aged 65 and over rating their own health as fair, bad, or very bad, 2017 (or nearest year)



Note: Numbers are close together for males and females for Canada, the United States, Australia, the United Kingdom and the Czech Republic. Data for New Zealand, Canada, the United States and Australia biased downwards relative to other countries and so are not directly comparable.
Source: OECD Health Statistics 2019.

Source: (OECD, 2019^[2])

1.1.3. Maintaining autonomy while minimizing risk is a challenging balance for LTC institutions

31. In LTC, treatment and living occur simultaneously—and outside of the bounds of the typical medical paradigm. For this reason, safety needs to be seen within the context of a range of other values—one where safety and independence are not fundamentally at odds, but two of many values, of which the importance shifts depending on the circumstance. Unlike other areas of care, researchers have argued that in LTC, safety is not an absolute mandate, but needs to be considered from multiple perspectives, including providers and residents estimates of risks. Potential harm should be estimated based on studied predictors, rather than worst case scenarios (Collopy, 1995^[11])

32. Autonomy is a central value in many societies and relies on the idea that people should be free to live with limited interference by others. In the case of those in LTC, autonomy is a central concern as many individuals, as a matter of condition, are unable to live their lives freely and without assistance. This overlay of autonomy and dependency can lead to challenges in care provision, adherence to standard safety procedures, and care management. More so than in other patient populations, and given the duration and location of care received by those in LTC, resident preferences need to be considered by LTC delivery organizations and individual care providers.

33. Perceived autonomy can have implications both for patient outcomes and for patient's experience of care. Research studying older people living in nursing and residential homes in Ireland found that environments that pose restrictions on autonomy were associated with worsening mental health outcomes, including depression (Boyle, 2005^[12]). Similarly, research from the United States found that older person's satisfaction with senior-centre services was significantly linked to autonomy (Matsui and Capezuti, 2008^[13]). Autonomy has been studied in relation to many QoL factors in the long-term care environment, including customized living spaces and freedom in choosing personal schedules, diets, and care plans. Government and organizational policies can serve to advance autonomy as a human right of older people living in long-term care settings (Boyle, 2008^[14]). An example is the Finnish Ministry of Social Affairs and Health that emphasizes autonomy and self-determination as marks of high-quality services for older persons (Ministry of Social Affairs and Health, 2018^[15]).

1.1.4. LTC environment is changing for both LTC recipients and LTC providers and the settings in which care is provided

34. The long-term care environment has seen significant changes in recent years. As the total number and proportion of older persons grows, the number of those requiring LTC is also expected to grow markedly. Across OECD countries, approximately 11% of people ages 65 and older received LTC services in 2017 (OECD, 2019^[21]).

35. These demographic trends not only affect those receiving LTC, but will also have implications for those in the positions of caring for those in long-term care. Many policies in OECD countries have pushed LTC recipients from residential settings towards home based care, in response to both individual preferences and financial pressures. However, this shift is often accompanied with corresponding movement from formal care provided by trained professionals to informal care. These trends leave the nursing home as the setting with more complex clients, which demand professionals with more specialized competences.

36. As more people move into home care, they face potential safety risks caused by low- or non-skilled workers, lack of access to services, and environments that are not properly designed or equipped for individuals requiring specialized care. Challenges around workforce skills and competencies are further discussed in Section 3.2.

37. As living standards increase in the OECD, this is coupled with increasing demand for choice about aspects of LTC delivery, including where the care is delivered, what services are available, and how they are funded and provided. Health systems should anticipate that care recipients will demand increasing say in the organisation and coordination of the care that they receive, as well as additional information about the availability and quality of services (Australian Royal Commission, 2019^[16]). These changes should take safety as a foundation on which new service models are built. These issues are echoed by the Public Inquiry into the *Safety and Security of Residents in the Long-Term Care Homes System* released in Ontario, Canada also in 2019. The report identified a number of systemic issues threatening the quality of care offered in Ontario's long-term care homes, and its 91 recommendations provide a detailed plan for long overdue improvements (Gillese, 2019^[17]).

1.2. The unique context of long-term care

1.2.1. The LTC context is unique for its role in the health care system

38. Populations using long-term care services, and especially nursing homes, are typically disproportionately older and medically complex. Patients using long-term care are more likely to have been previously hospitalized, and more likely to experience subsequent hospitalizations (McAndrew et al., 2016^[18]). In addition, many of these patients suffer from two or more chronic conditions, which require ongoing care management and lead to polypharmacy. High levels of health care utilization, combined with limited capacity for disease self-management, create higher risks for adverse events.

39. Individuals receiving long-term care may be particularly vulnerable to safety issues that arise during the course of care. Safety in LTC differs from acute care due to two key factors: the duration and setting. First, the duration and setting, and second, the staffing. Care recipients may receive care for extended periods of time, for example, in the United States, the average duration of LTC services is 2.5 years for women and 1.5 year for men (ASPE, 2015^[19]). Long durations of care require the coordination of numerous care providers—both formal and informal—who provide medical care, as well as physical and social support. The fragility of LTC recipients, combined with complex care needs (including managing care of chronic conditions), and limited mobility and/or cognitive function, put care recipients at increased risk that adverse

events will occur, particularly over long time spans. Secondly, the safety concerns are worsened by the staffing complement that is often inadequate in terms of dose (numbers) and skills-mix (regulated versus unregulated). As age and complexity of care needs persons to nursing homes continues to shift, the duration of their stay will decrease, leaving nursing homes with residents with ever higher complexity of care needs (Registered Nurses' Association of Ontario, 2018^[20]) (Registered Nurses' Association of Ontario, 2019^[21])

40. The other unique aspect of LTC is the setting. LTC may occur in a variety of places, ranging from institutions (such as nursing homes or rehabilitation centres) to an individual's home. Settings for LTC must dually function as medical facilities and places of daily living. This dual nature of LTC introduces complexity, as well as structural and interpersonal safety risks that are less easily mitigated than in an intensive health care setting like a hospital. In addition, and unlike hospital care in most countries, the market for LTC provision is dominated by private, for-profit providers. The structure, governance, and financing of the LTC has consequences for safety.

41. In recent years, government policies have promoted the use of home based care as an alternative to residential or institutional based care. This shift has been in response to peoples desires to remain at home as long as possible, in combination to high costs or residential LTC. This trend has been accompanied by the development of services to support home-based care for older adults in many OECD countries. Between 2007 and 2017, the proportion of LTC recipients who received home based care increased 4%, from 64% to 68%--with the largest increases occurring in Portugal, Australia, Sweden, Germany and the United States (OECD, 2019^[2]).

42. However, as the number of patients requiring care has increased, the number of formal carers has kept pace, and for many, informal caregiving has become a key source of service provision. Intensive caregiving is associated with higher poverty rates, lower labour force participation and a higher prevalence of mental health problems (OECD, 2019^[2]).

43. These informal care arrangements can lead to patient safety risks, particularly when unskilled care givers are tasked with managing technical health procedures, which can have serious consequences if not done correctly. A study of family caregivers in New Zealand found that caregivers had completed a number of complex medical tasks which are typically under the purview of certified health professionals—including nasogastric, gastrostomy and jejunostomy feeding; managing type 1 or 2 diabetes, enemas or bowel washouts, urinary catheters, a central venous access line, a tracheostomy, peritoneal dialysis or an ileostomy (McDonald et al., 2017^[22]). In the hospital setting, these kinds of activities would typically be undertaken by medical specialist and even require advanced training or certifications. However, informal carers often receive little or no training before taking responsibility for complex tasks which may put the recipient at risk.

44. Finally, LTC residents have been significantly under studied in comparison to other patient populations. A 2011 paper noted that the “academic-papers-written-to-public-expenditures” ratio is far lower for LTC than for the health sector as a whole (Brown and Finkelstein, 2011^[23]). A 2018 study reviewed reasons for limited research in the sector, and cited budgetary, methodological, ethical/legal, and stakeholder (owner/administrator, residents, staff, and family/caregiver) factors are barriers to research in LTC settings (Lam et al., 2018^[24]).

1.2.2. LTC and acute care can no longer be seen in isolation from each other

45. The relationship between LTC and acute health care services is drawing greater attention in recent decades, as medical care is increasing the life expectancy of previously

terminal conditions. (Costa-Font, Fernandez and Swartz, 2015^[25]). LTC is increasingly responsible for providing complex care that may have been previously provided in hospitals. Moreover, there is significant mobility between acute and long-term care settings that results in crossover of safety events and adverse events experienced during transitions in care. When LTC residents are brought into emergency care, they are put at risk for health care acquired conditions (HACs), medication errors, confusion and delirium, and unnecessary medical procedures. A study from Australia found that 80% of residential aged care facility (RACF) residents transferred into emergency care experienced potentially invasive interventions, and 34% died in hospital (Dwyer et al., 2014^[26]). Further research from Australia finds that 31% of transfers from RACFs were potentially avoidable, within the 7% to 48% range found internationally (Codde et al., 2010^[27]).

46. Complications in the LTC environment mean that patients are often cycled back into acute care settings. For example, the transition period between acute care settings to LTC is a particularly high-risk for adverse events. A recent study of patients in the United States, found that nearly 4 of 10 of discharges from hospital back to LTC resulted in an adverse event within 45 days of the transition (Kapoor et al., 2019^[28]). Additional findings from the US found that five percent of Medicare LTC patients experienced adverse events that resulted in them transferring to acute-care hospitals, emergency departments, or another specialty care provider (OIG, 2018^[29]).

1.2.3. LTC has strong linkages with social care

47. Much of LTC relates to social functioning, it provides assistance to help address physical and mental disability that impede an individual's ability to partake in regular activities, including "eating bathing, dressing, shopping and managing money" (Australian Royal Commission, 2019^[16]). Unlike care management for other populations, LTC for older populations typically focuses on managing functional impairments as opposed to disease management. In many cases, those receiving LTC are not necessarily sick, though health care services utilization is typically high (Australian Royal Commission, 2019^[16]).

48. While expenditure, in total, for LTC services are high, the resources available to any individual are generally low. Most funding for LTC services comes from public sources, and LTC recipients are typically financially at risk. Those over age 75 are more likely than average to experience poverty, with an average poverty rate of 14.4% for this age group (OECD, 2017^[3]). In some countries, the poverty rate of those over 75 surpasses 20%, such as Japan, the United States, Switzerland, Australia, Mexico, Korea, Latvia, Turkey, Israel and Estonia (OECD, 2017^[3]).

49. Globally, only 30% of the world's older people are covered by pension schemes (Krug et al., 2002^[30]). Compounding low incomes, individuals receiving LTC are less likely to have high levels of savings while they experience higher out of pocket costs for health care services. Across OECD countries, out-of-pocket spending on long-term care total 11% of all out-of-pocket spending on health (OECD, 2019^[2]). Restricted financial resources leave limited resources for individuals to look after themselves, and increase dependence on family and state support. Country governments continue to face challenges of balancing sufficient social protection for LTC with sustainable levels of public spending. Recent research from the OECD has found that between 70-90% of older persons with severe needs would be at risk of poverty without social protection (Muir, 2017^[31]).

50. In some countries, expenditure on social care has not kept pace with demographic changes. In the UK for example, between 2010 and 2017 the total number of people over age 80 increased by 340,000. However, during the same time period, real public spending on social

care decreased by 1%, and specifically spending on adult social care decreased by 6.4%. (Papanicolas et al., 2019^[32])

51. LTC also has several areas of overlap with other social services, including those related to mental health care, care for the disabled, and rehabilitation services. Mental health conditions are prevalent among the older persons, and those with chronic mental health conditions require complex care including a combination of psychiatric and medical support (van der Wolf et al., 2019^[33]). Research has shown that the presence of a disability was the leading determinant of whether an individual receives LTC (De Meijer et al., 2009^[34]). National systems to support mental health care, particularly for individuals with dementia, and care for the handicapped and rehabilitation services have significant interfaces with institutional LTC, and should be considered as key components of the LTC landscape.

Box 1.1. Scope of this report

This report will discuss the burden—economic and human—of low quality LTC on residents and their families, the LTC workforce, health systems, and economies. While LTC occurs in a number of settings, care in institutional settings, such as nursing homes, will be the main topic of analysis for this report. To further focus this report, the content will primarily focus on older populations (those 65 or older). On average in OECD countries as of 2017, 51% of LTC recipients were 80 and above and an additional 27% were 65 or older (OECD, 2019^[2]).

We recognize that there are a number of younger people who reside in and receive LTC services, for example those with severe handicaps or in recovery, but for the purposes of this report, we will be primarily focusing on older adults.

1.3. The economics of patient safety in long-term care

1.3.1. Patient harm in LTC is a not only a source of human suffering but also of wasteful spending

52. Adverse events are commonplace in LTC. In addition, the costs to address them are significant. The OECD generally refers to two categories of care that are deemed as “wasteful.” The first are services and processes that are harmful or that do not deliver benefits. The second category of waste are costs that could be avoided by substituting less-expensive alternatives that have the same benefit (OECD, 2017^[35]). To date there has been little systematic work examining wasteful health spending in long-term care. However, there are specific examples that suggest that the scope of wasteful care and spending may be significant.

53. As in other sectors, the costs of failure in patient safety outweigh the costs of investments in prevention and clinical risk management. The costs of poor quality care, which may result in adverse events such as unnecessary or extended hospital admissions can be significant. The costs of prevention are not negligible, but efforts to prevent adverse events such as falls, infections, and pressure injuries, can be achieved at low costs (Slawomirski, Auraaen and Klazinga, 2017^[36]). In addition, ensuring an appropriately skilled workforce, while more costly, is an important mechanism to improve quality care.

54. Most research to date has examined to use of appropriate settings for LTC, and potential reductions in waste that could be achieved by reallocating care services between LTC

settings. For example, research from the US finds that Medicare could save about USD 4.6 billion per year – without negatively affecting the quality of care or patient outcomes— by changing facility type (Einav, Finkelstein and Mahoney, 2018^[37]). Ensuring patients receive the right care, in the right setting and by the right care provider, will be pivotal to ensuring that spending on LTC goes towards services that actually improve or maintain resident's quality of life.

1.3.2. Flexible approaches are needed to improve safety and prepare countries' LTC provision to care for the ageing population

55. As countries prepare for increasing demand for LTC, there is a dual necessity to improve efficiency and ensure that resources are being used appropriately. In particular, as nursing homes take on more, and more complex, medical responsibilities, new approaches will be needed to ensure that LTC is provided safely. LTC settings must be recognised as the high risks settings they are, and patient safety and quality must be viewed as priorities, as they are in other high risk environments.

56. Beyond the walls of LTC residences, issues of safety in LTC also must be addressed in the context of the larger health care system, relating the costs of LTC to those of acute and social care. As health systems strive for greater integration, LTC should no longer be viewed in isolation, but within the context of a wide variety of care services. Moreover, as LTC residents often are also largely integrated into acute and social care arrangements—safety can no longer be viewed from just the lens of what happens in the care home. Safety in hospitals can influence the outcomes of care in LTC facilities and vice-versa. Investments, or lack of investment, in social services impacts the strains experienced by the system, and even health outcomes and the safety of those receiving care.

1.3.3. Improving safety must be considered in the context of Quality of Life

57. LTC resident QoL is affected by the individuals environmental, social, and medical context. Evaluating the quality of life (QoL) for LTC recipients is complex and can rely on multiple sources of information—of which self-report is considered the gold standard. Research has demonstrated that even patients with cognitive impairment and moderate dementia are able to provide insights on QoL through self-report (Gerritsen et al., 2007^[38]).

58. QoL domains assessed in LTC recipients include privacy, safety, comfort, respect, staff responsiveness, activity options, and personal relationships—among others (Kehyayan et al., 2015^[39]). QoL in LTC is an important consideration, as even patients who do not show improved clinical outcomes may significantly benefit from improved QoL associated with received care and support. Conversely, declines in QoL due to invasive care regimens or lack of autonomy can have detrimental effects for LTC recipients.

1.3.4. Previous OECD work on the economics of patient safety

59. Because many adverse events can be avoided, this represents a waste for health systems and negatively influences the creation of value in health care. While efforts to reduce harm are not free, the cost of prevention is often dwarfed by the cost of failure. National policy experts and academics have pointed to a hierarchy of interventions that are available and together can address patient safety issues effectively.

60. Previous OECD reports have drawn global attention to the economic implications of patient safety and identified potentially fruitful system-wide approaches to reducing harm and improve patient safety. The first report was presented at the Global Ministerial Summit on

Patient Safety in Bonn in 2017 (Auraaen, Slawomirski and Klazinga, 2018^[40]). The cost of care related patient harm in hospitals is considerable, with 15% of hospital activity and expenditure estimated to be directly attributed to patient harm.

61. While much attention is given to patient safety in hospitals, about 50% of the global burden arising from patient harm originates in primary and ambulatory care. The consideration of unintended patient harm in out of hospital care setting, including primary and ambulatory care and long-term care is becoming increasingly important as societies are ageing and chronic conditions are more comprehensively managed in the community.

62. Safety lapses in primary and ambulatory care settings continue to happen. In 2017, there were over 8 billion patient consultations with primary care providers in OECD countries alone. However, as many as four in ten patients experience a safety issue in their contact with primary care providers. Nearly half of the global burden of disease arising from patient harm originates in this setting, accounting for more than 7 million hospital admissions every year, or a total of 6% of all hospital beds. The key challenges to improving patient safety in primary care settings relate to the fragmentation of the sector, the lack of integration of information and measurement systems and under-resourcing. A reflection of this is the evident lack of consistent and robust safety data. The OECD prepared a report on the economics of patient safety in primary care for consideration at the Global Ministerial Summit on Patient Safety in Tokyo in 2018, highlighting that combined with stronger governance, investing in integrated information infrastructure is the most important and pressing policy imperative for this care setting (OECD, 2017^[41]).

Box 1.2. Key Findings from the OECD Economics of Patient Safety Series

This report is the third in a series of Economics of Patient Safety Reports commissioned by Ministry of Health of Germany (BMG).

The Economics of Patient Safety: Strengthening A Value-Based Approach to Reducing Patient Harm at National Level (2017)

Patient harm imparts a high financial cost. Overall, the available evidence suggests that **15% of hospital expenditure and activity in OECD countries can be attributed to treating safety failures**. This is likely to be a conservative figure. Patient harm is felt in the broader economy through lost capacity and productivity of patients and their carers. It is estimated that the aggregate costs amount to trillions of dollars each year. In the political economy, the cost of safety failure includes loss of trust in the health systems, in governments and in social institutions

Most of the burden of patient safety is associated with **a few common adverse events**. The most burdensome include healthcare-associated infections (HAI), venous thromboembolism (VTE), pressure injuries, medication error and wrong or delayed diagnosis. For example, it is estimated that every adult in the United States will experience a diagnostic error at least once during their life time. The annual cost of common adverse events in England is equivalent to the cost of 2,000 GPs or 3,500 hospital nurses.

Greater investment in prevention is justified. Many adverse events can be systematically prevented through better policy and practice, with the cost of prevention typically much lower than the cost of harm. HAI or VTE prevention programs, for example, cost a fraction of the financial burden these events impart. It is estimated that in the United States USD 28 Billion has been saved between 2010 and 2015 by systematically improving safety.

The economics of patient safety in primary and ambulatory care: Flying blind (2018)

Safety lapses in primary and ambulatory care are common; many of them can be avoided. **Estimates show that as many as 20%-25% of the general population experience harm in this setting** in developed and developing countries respectively. Some estimates say that as many as 4 out of 10 patients are harmed in the primary/ambulatory setting. Most harmful are errors related to diagnosis and prescription and the use of medicines. Up to 80% of harm in primary and ambulatory settings can be avoided.

The financial and economic costs of safety lapses are high. Available evidence estimates the direct costs of harm – the additional tests, treatments and health care - in the primary and ambulatory setting to be around **2.5% of total health expenditure** - although this likely underestimates the true extent. Harm in primary and ambulatory care often results in hospitalisations. Each year these may account for over 6% of hospital bed days and more **than 7 million admissions** in OECD countries - this is in addition to the 15% of acute care activity caused by harm occurring in hospitals alone. The broader, flow-on societal costs of harm in primary and ambulatory care are high. Estimates suggest that in developed countries this can approach 3% of GDP.

1.3.5. Economics of safety in the context of LTC

63. This report is the third by the OECD on the topic of the Economics of Patient Safety. Patient safety is a paramount concern in long-term care (LTC). The consequences of poor safety in LTC, as in other settings, are dire. Estimates from the United States suggest that as many as 5% of all LTC recipients experience an adverse event resulting in their death (OIG, 2018^[29]). Beyond staggering human costs, the economic burden of poor safety in LTC is costly for both countries and individuals.

64. Less is known of the economic costs of LTC safety failures, but there are clear signs that the cost is significant for the broader health sector, including the cost impact on ambulance transfers, acute admissions and rehabilitation services before returning back to their homes. While nursing homes are somewhat unique, in that they are people's home not hospitals, similar fundamentals as identified for acute care need to be in place. Availability of resources in LTC is often more limited than in other health care settings, and access to appropriate health care staff, supplies, and treatments can pose a challenge for the delivery of safe, quality LTC. While leadership and culture can be fostered, without sufficient capacity the ability to improve safe practices will be limited.

Box 1.3. Definitions and Concepts

Key definitions

Long-term care (LTC): Is defined as a range of services required by persons with a reduced degree of independence and functional capacity, physical or cognitive, and who are consequently dependent for an extended period of time on help with basic activities of daily living (ADL). This personal care component is frequently provided in combination with help with basic medical services such as nursing care (help with wound dressing, pain management, medication, health monitoring), as well as prevention, rehabilitation or services of palliative care. Long-term care services can also be combined with lower-level care related to domestic help or help with instrumental activities of daily living (IADL).

(LTC) institutions: Refers to nursing and residential care facilities (other than hospitals) which provide accommodation and long-term care as a package to people requiring ongoing health and nursing care due to chronic impairments and a reduced degree of independence in activities of daily living (ADL). These establishments provide residential care combined with either nursing, supervision or other types of personal care as required by the residents. LTC institutions include specially designed institutions where the predominant service component is long-term care and the services are provided for people with moderate to severe functional restrictions.

(LTC) recipients (or care recipients): People receiving long-term care in institutions or at home, including recipients of cash benefits

Care setting: The place where users of care services live, such as nursing home, assisted living facilities/sheltered housing or private homes, care at home and in the community.

Patient safety: The reduction of risk of unnecessary harm associated with health care to an acceptable minimum. An acceptable minimum refers to the collective notions of current knowledge, resources available and the context in which care was delivered and weighed against the risk of non-treatment or alternative treatment (WHO, 2018^[42]).

Adverse event: The term “adverse event” describes harm to a patient as a result of medical care or in a health care setting, including the failure to provide needed care. An adverse event indicates that the care resulted in an undesirable clinical outcome not caused by underlying disease. We separately identify temporary harm events, which are events that harmed patients and required medical intervention but did not cause lasting harm. (OIG, 2018^[29])

The cost of failure. Estimating the costs of lapses in patient safety. Costs are quantified in terms of disease burden (morbidity and mortality), and financial and resource impact on the health care system. This part of the report is informed by a review of the literature.

Reducing harm effectively and efficiently. Exploring a value-based approach to investing in patient safety in a resource-constrained context. The relative costs and impact of various interventions (and combinations thereof) targeting patient harm across health care systems are estimated using a snapshot survey of international patient safety experts and policy makers.

Source: (OECD/EU, 2013^[43])

2 The impact of financing and governance on safety in long-term Care

65. Spending on long-term care is exploding. Demands on the system have led to significant increases in LTC spending, which is now one of the fastest growing parts of the health sector. OECD estimates suggest that LTC expenditure is set to increase by almost 60% by 2070, by which it is estimated to account for 2.7% of total GDP (OECD, 2018^[44]).

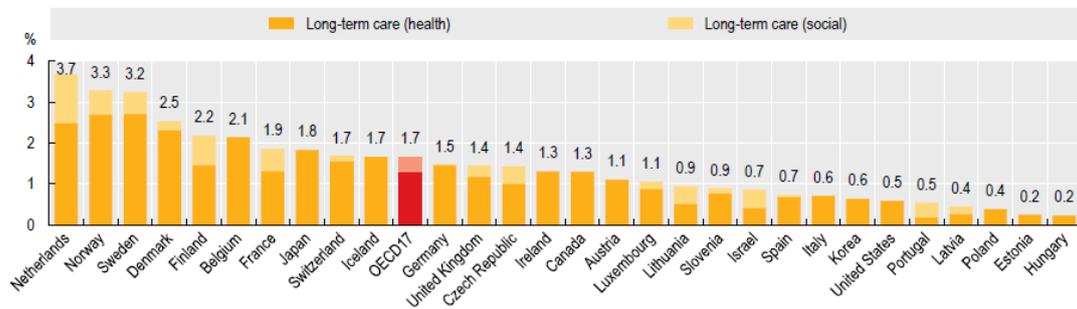
66. However, attempts to control costs expose the system to risks that compromise safety and quality of care. In these cases, potential savings may be lost by spending required in response to safety events, both within LTC or admissions to hospital or other acute care settings. There are many organizational interventions that can be used to improve care, as well as models that redirect LTC to less resource intensive settings (such as home care). However, in these models, the nursing home is where the most severe and complex cases receive care. In addition, regulation and safety standards for nursing homes are usually less developed than those that exist for hospital care despite the fact that many LTC facilities handle increasingly medically complex patients.

2.1. Financing models

2.1.1. Overview of common LTC financing models and sources

67. Expenditure on LTC has been increasing over the previous decades. Total government and compulsory spending on LTC (including both the health and social care components) accounted for 1.7% of GDP on average across OECD countries in 2017. Expenditure was highest in the Netherlands, Norway and Sweden, where spending in LTC is over 3% of GDP. (Figure 2.1).

Figure 2.1. Long-term care expenditure (health and social components) by government and compulsory insurance schemes, as a share of GDP, 2017 (or nearest year)



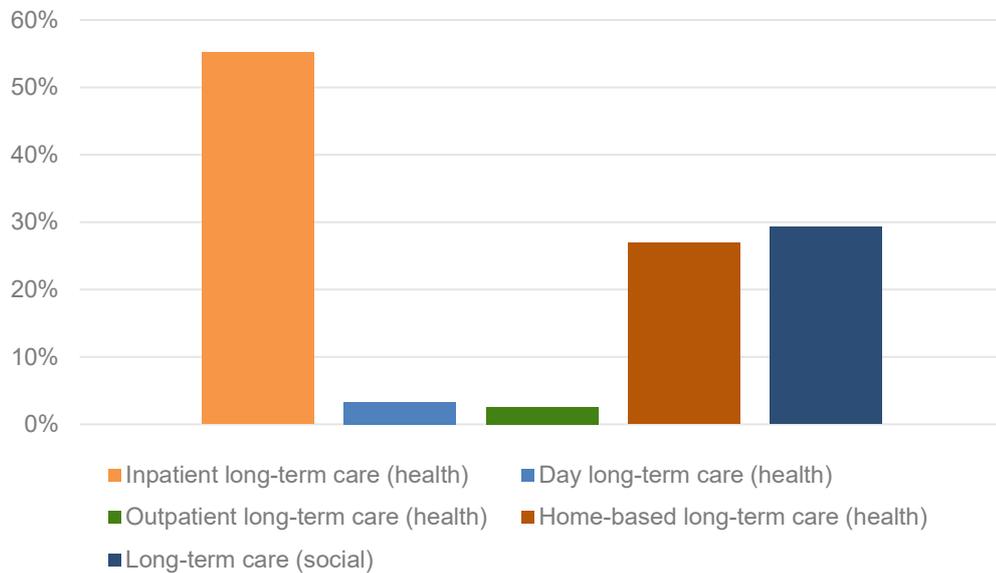
Note: The OECD average only includes 17 countries that report health and social LTC.

Source: (OECD, 2019^[2])

68. Despite a significant slowdown in spending on health care in many OECD countries following the 2008 economic and financial crisis, recent projections show that health spending is back on an upward trend. While health spending on inpatient and outpatient care is expected to increase by less than 1 percentage point in EU countries by 2070, LTC spending is expected to double over the same time period (OECD, 2018^[45]) (European Commission, 2018^[46]). As a result, a significant portion of the increases in health spending over the next 50 years will be attributable to growth in spending in the LTC sector.

69. Overall, the long-term care sector accounts for 14% of all health spending, as compared to 60% for inpatient and outpatient services (OECD, 2019^[2]). A degree of variation in LTC spending occurs across countries – reflecting the substantial differences in the way LTC is organised, the existence of formal LTC arrangements, public benefits packages that cover LTC services and the demographic composition of the populations. Figure 2.2 provides an overview of current reporting practice for all LTC components in the 32 OECD countries submitting data on LTC. Across OECD countries, the majority of funding—**an average of 52% of all reported LTC spending—goes to inpatient services.**

Figure 2.2. Reporting of LTC spending components, Average across 32 OECD countries, 2017 (or latest year)



Source: OECD Health Statistics 2019.

70. LTC can be financed from multiple sources, similar to other health care services. In most OECD countries, publicly financed LTC is fragmented and does not offer full financial coverage of care, even in cases where there are entitlements to publicly funded services. As such, individuals often are responsible for significant portions of the cost of LTC (Costa-Font and Courbage, 2015^[47]). An OECD review of countries found that state budget allocation was the most used source of public finance for LTC. This work demonstrates that many countries use diverse sources to publicly fund LTC. For example, the Czech Republic and Lithuania fund LTC via both central and municipal government funding. Estonia and Lithuania additionally use EU and foreign private sector funding for LTC (OECD, 2019^[48]).

Table 2.1. How is LTC publicly financed

Taxation	State budget allocation	Income-based contribution	Other
Belgium	Austria	Chile	Czech Rep
Czech Rep	Czech Rep	Costa Rica	Estonia
Estonia	Costa Rica	Czech Rep	Lithuania
Israel	Estonia	Germany	
Japan	Hungary	Japan	
Luxembourg	Israel	Korea	
US	Japan	Luxembourg	
	Luxembourg	US	
	Russia		
	Turkey		
	US		

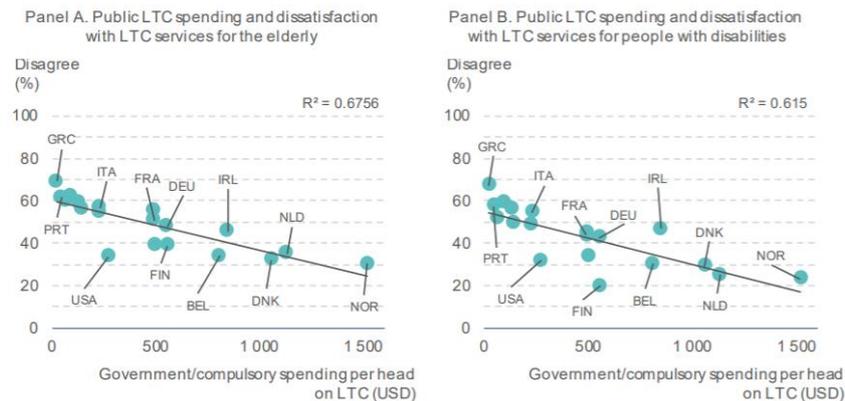
Note: In Austria there is no specific taxation for the financing of LTC. In Czech Republic, it is financed by state, regional and municipal governments. Estonia uses foreign private sector and EU funds. Lithuania uses central government budget, municipal budgets, EU structural funds, foreign foundations, sponsorship, social services organisation and family.

Source: OECD Questionnaire (OECD, 2019^[48]).

71. Spending on LTC can have significant advantages in increasing population satisfaction with the provided services. Government and compulsory levels of spending on LTC have been found to be significantly correlated with public perceptions of quality and access, as demonstrated in Figure 2.3.

Figure 2.3. Fewer respondents are unhappy with public long-term care services in countries that spend more on long-term care

Government/compulsory spending per head on long-term care (USD 2010 PPP) and percentage that disagree (or strongly disagree) that they have access to good quality and affordable public long-term care services for the elderly and for people with disabilities



Source: (OECD, 2018^[49]).

2.1.2. Provider payment mechanisms influence how care is provided

72. The payment mechanisms used to pay health care providers, individuals or institutions can influence both the cost and quality of care. Different models of payment mechanisms include: fee-for-service; per-diem payment; payment per case; capitation; budgets; and salaries—each of which has its own strengths and weaknesses in terms of quality and efficiency (WHO, 2007^[50]). The first three may tend towards over production of services, while the last three tend towards underproduction.

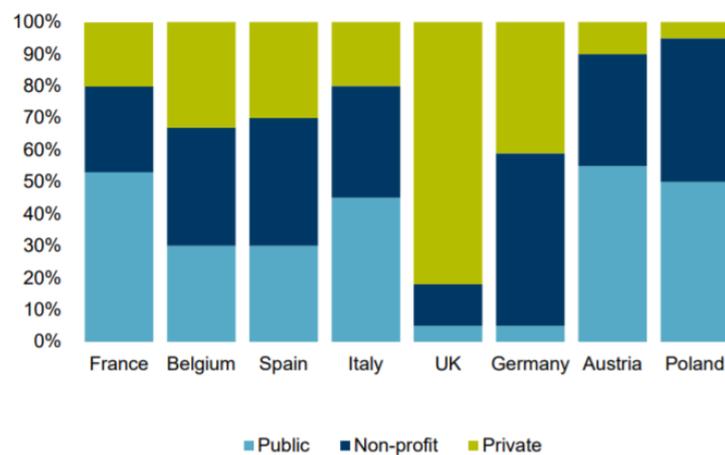
73. Fee-for-service schemes are not common in LTC, and particularly not in institutional settings (Colombo et al., 2011^[51]). Capitation payments are used in many countries, including, for example, the United States. While capitation payment mechanisms may incentivise underuse of services—the long duration of LTC provides counter-incentives to ensure the health of the covered population. Public LTC systems, such as those used in France, Belgium and Canada, typically provide reimbursement on a per-diem basis. In some cases, payments are risk adjusted to reflect the relative intensity of services needed by sicker patients with corresponding higher reimbursement (Colombo et al., 2011^[51]).

2.1.3. Private LTC Market for insurance is small, but private providers are common

74. Arguably, LTC is the largest insurable risk that older individuals face in OECD countries. Despite significant financial risk, overall demand for LTC insurance appears disproportionately small (Costa-Font and Courbage, 2015^[47]). Generally, low levels of market demand have been found to be influenced by expectations of available public support and informal care provided by family members. There are two major types of LTC insurance products, partial reimbursement policies and indemnity policies.

75. The private LTC market is generally small across OECD countries. Private insurance arrangements account for the highest levels of total LTC expenditures in the United States and Japan, 5% and 7% respectively. In Europe, France has the largest LTC private insurance market, with 5.5 million policyholders in 2010, followed by Germany, with 3.5 million policyholders as of 2017 (Costa-Font and Courbage, 2015^[47]). On average across OECD countries, private insurance arrangements account for less than 2% of total LTC spending (Colombo et al., 2011^[51]). While private financing of LTC is less common, private operation of LTC institutions is wide spread across OECD countries. Private LTC is often more expensive than publically delivered care. Even so, there has been an increase in LTC provision by private providers in recent years, in part due to increased demand. Privately operated care homes make up more than 20% of the beds in France, Belgium, Spain, Italy, the UK, and Germany (Wakefield, 2019^[52]).

Figure 2.4. Care home beds by type of Operator



Source: (Wakefield, 2019^[52])

2.1.4. Public LTC provision and coverage, funding, and staffing models

76. Most LTC coverage is provided through public sources. While LTC coverage in general, includes broad scope of services, benefits, and schemes, it is still possible to distinguish countries with similar approaches. More specifically, public long-term care coverage for personal care can be clustered into a few main categories of systems (Colombo et al., 2011^[51]).

77. Many countries provide universal coverage within a single programme. In these systems, LTC coverage is provided through a single mechanism, which may be administered separately from the health system (as is done in Nordic countries as part of social long-term care insurance), or part as part of regular health coverage (e.g., Belgium). These systems provide publicly-funded nursing and personal care to eligible individuals based on their care-dependency status. Some countries focus services primarily for an older populations, as is done in Japan and Korea, or to all people with eligible care needs, as is done in the Netherlands and Germany (Colombo et al., 2011^[51]). Though the majority of funding comes from public sources, co-payments, user charges or up-front deductibles are required even in universal coverage systems.

78. Under mixed systems, LTC coverage is provided through multiple of different programmes and benefits, or a mix of universal and means-tested LTC entitlements. Many of the countries with mixed systems do not have one comprehensive single programme LTC

system, but instead multiple LTC benefits, programmes, or entitlements, depending on target groups, specific LTC cost component or setting covered. Rather than provide in-kind services, some countries utilize cash-benefit systems (Colombo et al., 2011^[51]).

79. Safety-net schemes function by providing protection to those who would otherwise be unable to pay for the care. In these systems, LTC coverage is provided through safety-net programmes. Income and/or asset test thresholds are used to determine eligibility to publicly funded personal care. Only individuals or families that do not meet the thresholds are entitled to publicly funded LTC services or benefits, with care prioritised based on need. Eligibility criteria, care-managers' flexibility in assessing needs, and thresholds for eligibility vary significantly across countries (Colombo et al., 2011^[51]).

80. Coverage for most individual's LTC often requires additional funding from other sources. For example, in the United States over 30 percent of Medicaid's USD 400 billion in shared federal and state spending goes to LTC for older people and the disabled. However, this coverage is not complete, covering no more than 100 days of rehabilitation and does not cover custodial care, including assistance with activities of daily living (Bernstein, 2012^[53]). As a result, patients often must pay substantial out of pocket costs or cover costs through voluntary insurance.

2.2. Governance and incentive structures

2.2.1. Effectiveness of governance models through national standards and quality incentives

81. Safety in LTC is fundamentally a governmental responsibility. It is the role of governments to ensure that LTC is provided safely and without harm to those who are receiving care. However, LTC is often less regulated than other parts of the health sector. This is compounded by the fact that provision of care is distributed across a number of public and private providers, with potentially differing operating procedures, staffing requirements, and accountability mechanisms. None the less, as the Public Inquiry into the Safety and Security of Residents in the Long-Term Care Homes System in Ontario, Canada, stated in its Strategy for Safety, it is a critical public health concern that LTC provision is safe, and one that is within the mandate of good governance to address (Gillese, 2019^[17]) (RNAO, 2019^[54])

82. Despite efforts to drive improvement, high quality care across LTC settings remains an elusive goal. OECD countries have primarily used systems of accreditation and the standards to ensure that LTC meets quality minimums. In Germany a new system combining internal quality management and external control of standards by regular reporting on outcome quality indicators (e.g. inter alia on the development of pressure ulcers and on falls with severe consequences) and yearly quality inspections of care homes has come into force in November 2019. A recent review by the EU found that National experts describe severe shortcomings in the quality assurance of care services (e.g. Greece, Macedonia, Romania, United Kingdom) and Lithuania even reports concerns regarding human rights abuses in institutions for older persons (Spasova et al., 2018^[55]).

Box 2.1. Examples for setting of requirements and minimum standards in long-term care

Ireland: The Health Information and Quality Authority sets standards for residential care and announces regular inspections of nursing homes.

Latvia: All providers of LTC services must register with the Ministry of Welfare and must meet quality requirements such as those related to the number and qualification of staff, the accessibility of care premises or the adjustment of providers to the needs of recipients. Quality inspections should be carried out to assess all providers every year, but in reality, only some can be assessed due to a lack of resources.

Lithuania: Quality standards have been set for residential care institutions according to regulations from the Ministry of Social Security and Labour. Despite supervision of the implementation of standards by the Ministry's Department of Supervision of Social Services, the assessment system is not fully functioning.

Portugal: Providers of LTC must follow accreditation procedures. The standards are organised around three general areas: the structure (number of beds, human resources); the process (registration procedures for the assessment of risks etc.) and outcomes (occurrence of injuries, infections, falls etc.). Additionally, some specific standards are set for different types of inpatient unit. Inspections are conducted on a sample of providers.

Poland: Quality standards established for residential care institutions cover three main domains: employment, procedures and accommodation standards, separately for the health and social sector.

Source: (Spasova et al., 2018^[55])

Accreditation

83. Almost all OECD countries require that LTC institutions be licenced based on minimum safety and performance requirements to ensure that institutions are fit to operate. (OECD/EU, 2013^[43]). More than two-thirds of 27 OECD countries reviewed found that accreditation or certification of LTC facilities was required in some sense. The accreditation process assesses the services provided, as well as the quality of these services, recognizing the institutions that are able to meet their standards. Typical standards for accreditation in LTC involve structural benchmarks, as well as those for workforce and safety.

Table 2.2. Accreditation requirements or uses for LTC

Accreditation Requirement/Use	Example Countries
Accreditation is compulsory for LTC	e.g. England, Spain, Ireland, and France
Accreditation is an condition for reimbursement or contracting	e.g. Australia, Germany Spain, Ireland, England, Portugal, the United States
Accreditation is common practice	e.g. Switzerland

Source: (OECD/EU, 2013^[43])

Staffing levels

84. One area of particular interest to the LTC sector is requirements related to staffing levels (RNAO, 2019^[54]). Despite the acknowledgement to the importance of adequate staffing, the amount of care delivered by different levels of staff can vary significantly across and within countries. However, quality care has been found to be associated with both the amount of

personnel coverage, as well as the experience levels of those delivering care (Boscart et al., 2018^[56]).

85. To improve the quality of care delivered, a number of countries have requirements regarding staffing standards and levels. The US, for example, requires that certified nursing homes have at least one registered nurse on duty for 8 consecutive hours 7 days a week, including a full-time director of nursing, and one registered nurse and one licensed nurse for the two remaining shifts, without adjustment for resident cognitive ability (Harrington et al., 2012^[57]). The requirements for certification of registered and licenced nurses vary by state. In Canada, staffing standards are established at the provincial level, of which three required the staffing of a registered nurse director of nursing and seven required a registered nurse to be on duty at all times (Harrington et al., 2012^[57]). England in the UK requires a minimum ratio of 50% certified to total staff member for nursing homes. In Germany, a scientifically based skill mix determination tool is currently being developed and tested in order to ensure that inpatient care facilities are adequately staffed (see box 2.2). Both Sweden and Norway do not have formal staffing standards for levels or staffing or skill mix, so care staff composition is determined at the institutional level (Harrington et al., 2012^[57]).

Box 2.2. The development of a skill mix determination tool in Germany

Nursing homes with different populations face different staffing needs. For example, nursing homes with large numbers of patients with dementia may require more, and specifically qualified, staff than those without. However, many national or sub-national requirements for staffing coverage and qualifications do not take into account the specific needs of the individuals residing within a nursing home.

Addressing workforce levels and skill mix for staff working in nursing homes is an issue of high policy interest in Germany. The staffing in Germany has been increasingly considered as too low and is thought to have an impact on the provision of quality care and the working conditions for those providing care services in nursing homes.

The University of Bremen has been commissioned by the LTC Insurance Funds and the service providers on the basis of a legal provision to develop an instrument that will provide a nationwide personnel assessment tool, which aims to establish appropriate staffing levels and numbers in nursing homes, while maintaining positive working conditions for nurses.

This tool will use an analytical approach to determine the number of personnel needed and the qualification mix that would be most appropriate for the delivery of quality care. The tool will take into account (1) the mix of care interventions required per resident, (2) the required time per person per intervention, and (3) the assessed qualification level of the person providing the intervention. Initial modelling suggest that significantly more nursing assistants will be required to achieve optimal nursing home staffing levels, but only a small number of additional specialist nurses will be needed.

Source: (Rothgang, Fünfstück and Kalwitzki, 2020^[58])

Financial incentives

86. A number of other economic instruments have been adopted to promote quality services in LTC across OECD countries. These include quality related subsidies, quality related procurement and payment schemes (such as pay for performance) and public procurement. Quality related subsidies include examples from England, where providers that invest in staff training are eligible for government funding, as an incentive to improve the workforce skill set.

Quality related procurement relates funding to the characteristics of LTC service provision or staffing levels. Australia and Japan, for example, provide additional payment if certain standards are met or exceeded. In Japan, additional reimbursement is based on staffing levels. In Australia, payments are increased if workforce reforms are implemented.

87. Another form of quality related procurement is pay for performance. At the national level, the U.S. based program Medicare adjusts payments (either in the form of bonuses or penalties) based on nursing home performance on avoidable hospital readmissions (Rau, 2018^[59]). However, research in the United States has found that pay for performance programs have had mixed effects on nursing home quality (Werner, Konetzka and Polsky, 2013^[60]). Japan currently has two pay-for-performance programs for public long-term care services. The first program pays long-term care facilities an increased rate based on the proportion of patients who receive stroke rehabilitation care. A second program provides incentives to high-performing LTC institutions that implement prevention programs. (Norton, 2017^[61]).

88. A final example of economic incentives relates to public procurement, where by a public purchaser can increase the quality of by evaluating proposals based on quality criteria and evaluating potential providers on the basis of both price and quality. Figure 2.5 provides additional examples of economic instruments to promote long-term care services in some OECD countries.

Figure 2.5. Summary of the forms of economic instruments to promote long-term care services across OECD countries

Type of intervention	Direction of implementation	
	Top-down	
Quality-related subsidies , for example, for investments in quality infrastructure; for certifications; for projects aiming to improve quality	ENG (workforce development subsidies)	
Quality-related price regulation, payment schemes , for example, P4P, mark-ups on reimbursement rates for over-fulfilment of standards	AUT (funding linked to adoption of quality management schemes) JPN (mark-up on reimbursement) AUS (CAP) ENG, US (P4P – care homes) AUS (P4P – care homes and home care)	
Quality-related public procurement , for example, quality criteria and their weights in public procurement	AUS (call for tenders on quality criteria only possible) ENG	

Key: AUT = Austria, AUS = Australia, ENG = England, FIN = Finland, JPN = Japan

Source: (Gori and Fernandez, 2016^[4])

Box 2.3. Nursing Home Five-Star Program in the US

The Nursing Home Compare website and Five-Star Quality Rating System were created by CMS to help consumers, their families, and caregivers compare long-term care facilities (LTCFs), helping them to identify elements they may want to ask about when looking at nursing care. In addition to being used by consumers, the information is also utilised by health systems developing preferred skilled nursing facility (SNF) networks to improve clinical and financial outcomes.

Nursing Home Compare has a quality rating system that gives each facility a rating between 1 and 5 stars. Those with 5 stars are considered to have above-average care quality, and those with 1 star are considered to have below-average care quality. A recent addition to nursing home compare provides consumers with an alert identifying nursing homes that have been cited for potential issues related to abuse.

There is one overall 5-star rating for each facility and also a separate star rating for each of the following 3 factors:

Health Inspections. Inspections include the findings on compliance to Medicare and Medicaid health and safety requirements from onsite surveys conducted by state survey agencies at LTCFs.

Staffing Levels. The staffing levels are the numbers of nurses available to care for patients in an LTCF at any given time.

Quality Measures. The quality of resident care measures is based on resident assessment and Medicare claims data.

Current long stay quality measures in the 5-star rating program include the following:

Number of hospitalizations per 1,000 long-stay resident days.

Outpatient emergency department visits per 1,000 long-stay resident days.

Percentage of long-stay residents who got an antipsychotic medication.

Percentage of long-stay residents experiencing one or more falls with major injury.

Percentage of long-stay high-risk residents with pressure ulcers.

Percentage of long-stay residents with a urinary tract infection.

Percentage of long-stay residents who have or had a catheter inserted and left in their bladder.

Percentage of long-stay residents whose ability to move independently worsened.

Percentage of long-stay residents whose need for help with daily activities has increased.

Percentage of long-stay residents who needed and got a flu shot for the current flu season.

Percentage of long-stay residents who needed and got a vaccine to prevent pneumonia.

Percentage of long-stay residents who were physically restrained.

Percentage of long-stay low-risk residents who lose control of their bowels or bladder.

Percentage of long-stay residents who lose too much weight.

Percentage of long-stay residents who have symptoms of depression.

Percentage of long-stay residents who got an antianxiety or hypnotic medication.

Source: (Stefanacci, 2019^[62]) (CMS, 2019^[63])

2.2.2. Incentives to coordinate care across settings have potential to improve quality and safety of LTC services but are not common

89. Long-term care settings are closely linked with other aspects of the health system. Policymakers are increasingly focusing on making sure that acute and long-term care are used appropriately—with coordination between settings. Acute care admissions can be difficult for frail, older populations, exposing them to hospital acquired conditions and infections, unnecessary tests and invasive treatments, and an uncomfortable environment. In addition, the costs of acute care are far greater than those typical of LTC. There are opportunities to improve

the outcomes and efficiency of long-term care services by ensuring that patients have timely access to appropriate services.

90. There have been a number of pilot projects that have worked to enhance the coordination of care across settings. One study in the United States, found that financial incentives combined with the implementation of programs to allow for the provision of high-cost oral and subcutaneous medications in the nursing home setting reduced non-acute hospital admissions (Lago et al., 2005^[64]). A number of other initiatives at the organizational level in the US have been found to be effective in reducing hospital admissions from LTC settings (Bercaw et al., 2016^[65])

91. Schemes where lower levels of care have held the budgets for patients, and thus have financial incentives to reduce preventable emergency hospital care, have been rolled out at other levels of care in some countries, for example in primary care in the UK (Ham et al., 2010^[66]). Such approaches are currently being explored by some OECD countries for use in LTC to encourage investment in prevention activities.

Box 2.4. Registered Nurses’ Association of Ontario Quality Indicators for reporting and evaluation

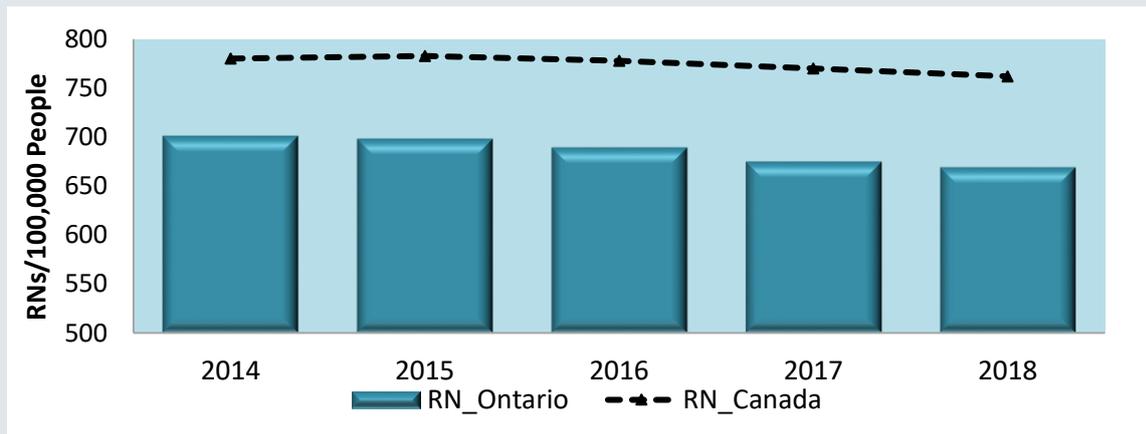
In 1999, funded by the Ministry of Health and Long-Term Care, the Registered Nurses’ Association of Ontario (RNAO) launched the Best Practice Guidelines (BPG) Program, consisting of three main pillars: guideline development, active supports for implementation, and access to evaluation through a large scale data system – Nursing Quality Indicators for Reporting and Evaluation® (NQuIRE®) (Grinspun and Bajnok, 2018^[67]).

A subset of RNAO’s BPG Program is the Long-Term Care (LTC) Best Practice Coordinator role, introduced to the sector in 2008 – also funded by the Ministry of Health and under the leadership of RNAO. The program has resulted in improved quality of care and outcomes for residents, as well as the advancement of an evidence-based practice culture by front-line staff through the implementation of BPGs. In 2014, RNAO launched a call for Best Practice Spotlight Organization (BPSO) applicants specifically for LTC homes. To date 52 LTC BPSOs are part of this program, each of which has entered into a formal three (3) year agreement with RNAO. During this time, LTC home leaders and their staff focus on enhancing their evidence-based cultures, with the mandate to implement, evaluate and sustain a minimum of three (3) RNAO clinical BPGs, one of which must be implemented across the entire organization. The RNAO also has BPSOs in all other sectors totalling to date 550 in Ontario and about 350 in other Canadian jurisdictions and 15 other countries.

At the policy level, RNAO has repeatedly raised concerns over the steadily decreasing ratios of RN to population in Ontario which is failing to keep pace with population growth. A brief analysis of the data available from Canadian Institute for Health Information (CIHI) follows.

The figure below represents the overall RN-to-population ratio within Ontario and Canada from 2014 to 2018. Since 2014, the overall RN to-population ratio has fallen steadily, from 701 to 669 RNs per 100,000 people. Furthermore, while Canada had 762 RN per 100,000 people in 2018, Ontario only had 669 RN per 100,000 people. Ontario has the lowest overall RN-to-population in Canada.

Figure: Ontario’s Registered Nurse (RN) to population ratio



The RNAOs holds a robust nursing data system to support BPSOs in monitoring and evaluating the impact of guideline implementation. The goals of NQuIRE are to enable evaluation of BPG implementation based on quality-of-care and patient outcome indicators and show the impact of BPG utilization on patient, organizational and health system performance. BPSOs have the mandatory

requirement to submit de-identified aggregated data to NQuIRE through a web-based interface, on guideline-specific nursing-sensitive quality indicators.

The NQuIRE data system develops a number of safety indicators, including on the areas of falls and pressure injuries. The table below offers a listing of the NQuIRE indicators available corresponding to these two topic areas.

Table: Falls and pressure injury NQuIRE indicators.

Best Practice Guidelines	Process Indicators	Outcome Indicators
<i>Preventing Falls and Reducing Injury from Falls (2017, 4th ed)</i>	Percentage of adults screened for falls risk	Rate of falls per 1000 adult care-days/care-visits
	Percentage of adults at risk for falls who received an assessment	Percentage of adults who fell in the past 30 days
	Percentage of adults with recurrent falls, multiple risk factors and/or complex needs who received referral for further assessment	Percentage of falls resulting in injury
	Percentage of adults who received a post-fall assessment following a fall	
	Percentage of health workers educated on compliance with universal falls precautions	
<i>Assessment and Management of Pressure Injuries (PI) for the Interprofessional Team (2016, 3rd ed)</i>	Percentage of persons with PI who received a risk assessment for developing additional PI	Percentage of persons with pre-existing PI on initiation of care
	Percentage of persons with a newly identified stage II-IV PI who received an assessment on initiation of care	Rate of persons who developed a new PI per 1000 care-days/care-visits
	Percentage of persons with a new or pre-existing PI with an individualized plan of care	Percentage of persons whose stage II to IV PI worsened
	Percentage of persons with PI who have a pressure redistribution/off-loading device	Percentage of persons with PI with signs of healing after 2 to 4 weeks

Source: Doris Grinspun, Shanoja Naik, and Megan Bamford

For details on the BPSO Program <https://rmao.ca/bpg/bpso>. For details on NQuIRE: <https://rmao.ca/bpg/initiatives/nquire>.

2.2.3. Legal protections for individual autonomy have been implemented through national legislation

92. Issues of individual autonomy in LTC are often protected through legal structures at the national or sub-national level. An example of this is the System for Promotion of Personal Autonomy and Assistance for Persons in Situation of Dependency (SAAD) in Spain, which commits to allowing beneficiaries to remain in their community/environment whenever possible; and provides standards for quality and accessibility (Peña-Longobardo et al., 2016^[68]). The European Social Charter, adopted in 1988 includes wording related to the care of older persons in a provision that has been adopted by 20 member countries. Agreeing states have assumed the obligation to enable older people to lead independent lives in familiar surroundings in response to their preferences and ability, and with appropriate health care support. For individuals living in institutions, the charter states that older persons should receive care with appropriate respect to privacy, and that care recipients should be active participants in decisions concerning their living conditions (The Council of Europe, 2018^[69]).

2.2.4. Optimal uptake of technology could be further explored to improve LTC service delivery

93. New approaches to provide services to those receiving LTC may have potential to reduce costs and increase the efficiency of care provision. New technologies are one potential way forward, however to date there has been little research on the potential benefits of technologies in institutional care settings, as compared to acute care or older adults living in community settings.

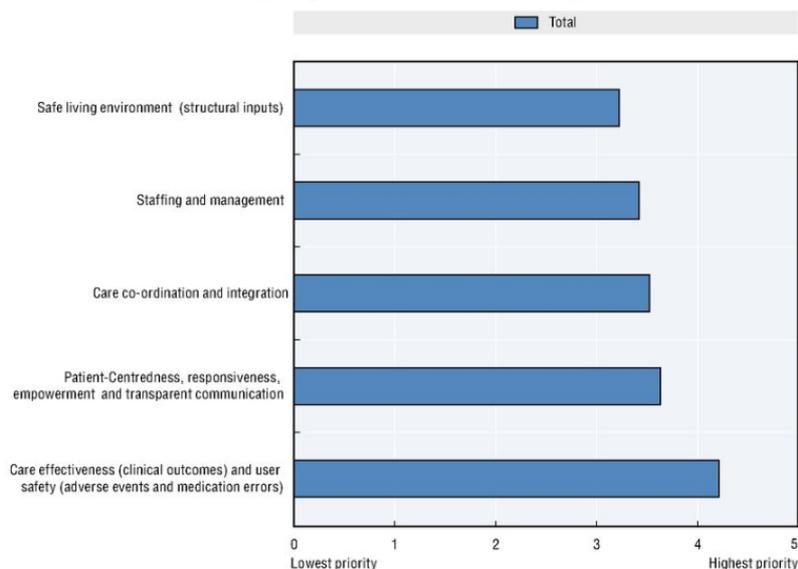
94. Most technologies aim at assisting LTC workers, support remote care and enable disease and self-management. Assistive technologies include sensors used at home care or installed in nursing homes, as well as technologies that assist in the medication management—including dispensing, tracking, and adherence (Colombo et al., 2011^[51]). These technologies assist professionals in monitoring their patient, creating efficiencies in care provision. Some remote monitoring systems are able to remotely manage and monitor a range of health conditions, with capacity to collect and send health information to a secondary location for monitoring and interpretation. Collected information may include temperature, blood pressure and other vital signs (European Commission, 2015^[70]). In Norway and the Netherlands, the use of cameras and sensor in nursing homes has led to reduction in emergency visits and reduced staff needs (OECD, 2020^[71]). Opportunities for remote care are also expanding through telehealth. These systems allow for communication across teams (e.g. between nursing home and hospitals), supports autonomy of care provider, and allow nurses provide services to patients across several locations.

95. Finally, the use of self-management technologies is also quite common to help older people live more independently. These may include assistive technologies (including assistive robots), communications devices, smart homes, and technology-based health care (European Commission, 2015^[70]). Update of technologies for LTC may include products and services that aid care recipients in activities of daily life, promote resident choice, control, and dignity, and improve the QoL in LTC institutions (Tak, Benefield and Mahoney, 2010^[72]). In addition to improving professional carer's productivity and quality of care, a number of technologies have also been found to generate savings for the public long-term care system (European Commission, 2015^[70]).

2.2.5. Political leadership can be a driving force for improving safety in LTC

96. Safety in LTC is a key interest of policy makers, as illustrated in Figure 2.6, where care effectiveness and user safety (including adverse events and medication errors), was found to be the highest priority area in a survey of OECD countries. Patient-centeredness, care coordination, and staffing were also important priority areas for policy makers. A 2013 review of 25 OECD countries found that all examined countries had legislation establishing principles of adequate and safe care. The use of regulation and legislation is one of many tools used to ensure that older people receive appropriate and quality care and have access to choice and control over LTC arrangements (OECD/EU, 2013^[43]).

Figure 2.6. Care effectiveness and user safety judged to be the highest priority area in quality of LTC in OECD countries, 2012



Note: Includes responses from 24 countries.

Source: OECD 2012 Questionnaire on Long-Term Care Quality.

Source: (OECD/EU, 2013^[43])

2.2.6. Organizational leadership and culture at the institutional level are key inputs to a safe LTC environment

97. Management and leadership in LTC settings is critical for strengthening quality of care. Leadership in LTC settings is faced with numerous challenges, including increasing quality expectations, client and family preferences, financial limitations, and staffing shortages (Dana and Olson, 2007^[73]). Despite challenges, LTC leaders are in a position to influence and improve organizational and patient safety culture. Leadership is responsible for designing and managing systems that will produce consistent, high-quality outcomes for highly fragile populations, over extended time-periods. Every decision has the capacity to influence the delivery of quality care. Staffing allocations are a key example. Unlike many other aspects of health care, long-term care is often provided by workers with limited medical training and experience. Research from Norway has found that a higher ratio of unlicensed care workers in nursing homes was inversely related to quality of care (Havig et al., 2011^[74]). LTC leadership must balance budget restraints, with staffing requirements to efficiently and effectively meet the needs of care recipients.

98. Understanding of leadership roles and methods for improvement has been found to vary between frontline care providers and management. In one study, corporate personnel identified the most common barriers to providing quality care as being related to talent recruitment and adequate training and preparation for hired nurses. Frontline staff noted that barriers were most attributable to aspects of leadership related to workload distribution, support and resources, namely, physical support (Chu et al., 2015^[75]). Studies of leadership in Nursing Homes in Norway found that task-oriented leadership style, defined as specifying work procedures and rules and monitoring tasks, were associated with higher quality care (Havig et al., 2011^[74]). Some methods have been shown to drive leadership performance and improve safety related practices. For example, LTC organizations in the Netherlands have implemented practices such as WalkRounds, in which executive leadership informally talk about safety issues in the organization with front-line staff and show their support for safety best practices (van Dusseldorp et al., 2014^[76]).

2.2.7. *The way forward for governing for safety in LTC*

99. A foundational aspect of LTC delivery is safety. **People should feel safe living, working, and visiting LTC institutions.** A lack of safety, from each of these perspectives, limits the ability of the system to provide quality care and promote meaningful social engagement.

100. Failing to provide safe care to LTC residents is a system failure. It is the role of Government to ensure that resident safety standards are in place, and that people are not receiving care that harms them. This is particularly important in this case as older persons living in nursing homes are especially vulnerable due to age, disability, cognitive deterioration and other reasons, as described in Section 1.1.2. To strengthen LTC institution's ability to deliver safer care to patients, systems need to know how they are performing on patient safety in order to appropriately identify where improvements can be made. Currently, numerous countries do not have adequate safety standards for nursing homes or LTC (Spasova et al., 2018^[55]). Safety standards, including those mandated through accreditation process, are pivotal tools for ensuring that minimum standards are met with regard to employment (staff ratios and qualifications), infrastructure, living environment or quality outcomes, although the latter remains largely underdeveloped in the LTC environment (Spasova et al., 2018^[55]).

101. Standards alone are not sufficient, and must be properly measured and enforced. For example, current perceptions of safety for staff and residents are not routinely measured in most countries. While some tools exist, they are not widely or systematically used to assess and improve the care environment. Just as importance of measurement of patient safety culture has become increasingly recognized in previous decades, **measurement of resident safety culture in LTC should also be conducted systematically, both from the patient and caregiver perspective**, to improve care and reduce the occurrence of adverse events.

102. In addition, to improving measurement, there are opportunities for LTC to better incorporate financial incentives and governance models that promote prevention over failure response. Attempts to control costs in LTC may have the unintended effect of exposing the system to risks that compromise safety and quality of care. In these cases, potential savings may be lost by spending required in response to safety events, both within LTC or admissions to hospital or other acute care settings.

103. Financing trends show that spending in LTC is increasing, with significant amounts of funding coming from both the public and private sectors. However, despite the urgency of controlling costs of LTC, there has been relatively little scaling of innovative governance models or systematic implementation of incentives to encourage coordinated care. More could be done to implement policies and practices that prioritize safety mechanism based on learning and risk assessment, broadening the safety management beyond control based on error. Nursing homes have as much, or more, to learn from examples of success than they do from identifying, and responding to failures on a case-by-case basis.

104. While the current scope of existing policy initiatives may be limited or unscaled, there is great potential to improve the delivery of safe and quality LTC. There are numerous innovative models, from legislation on staffing ratios, to best practice guidelines, to advanced accreditation standards, that may be effective for improving the quality and safety of care provided. Also, the potential for using LTC facilities as learning communities are large but need leadership and facilitating. Moreover, policies that encourage the accountability of care of patients across the LTC and acute care settings are well positioned to enhance the safety and quality of delivered care.

3 LTC provision and workforce

105. Health care workforce is one of the most pressing issues faced by the sector today. Shortages of workers are not the only problem. There are significant discrepancies between the services that are delivered in LTC and the skills of those who provide them. While the health profile and dependency of residents has been changing, the workforce mix and level has remained relatively unregulated and static.

106. There is now a gap between capacity, competences, and demand. In today's environment, where many LTC facilities function as mini-hospitals, investment in an appropriately skilled workforce is pivotal to ensuring the safety of residents. While investments in workforce come at a cost, they have the potential to reduce spending in hospitals, which comes at a much higher price. It is pivotal to look at spending in LTC within the context for the whole health system, and in particular in terms of its relationship with hospital care.

3.1. Overview of complexities of LTC provision

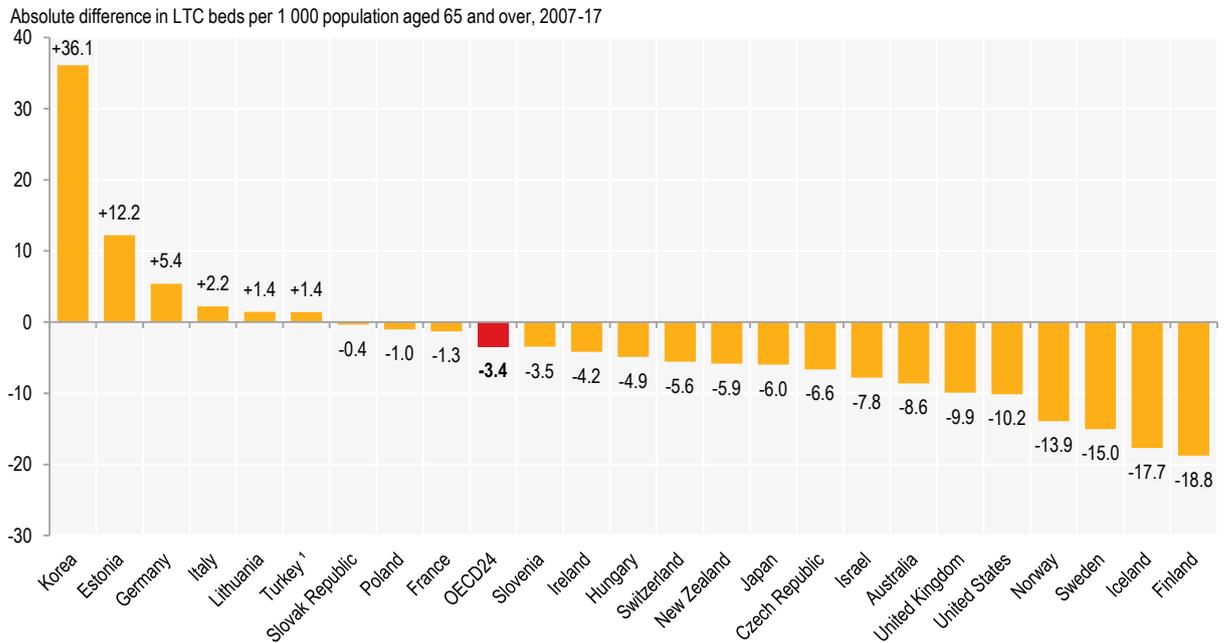
3.1.1. Trends in settings of care have led to changes in the profiles of both patients and caregivers

107. Historically, LTC in most countries has been provided in institutional settings. A non-exhaustive list of institutions includes medical and health care facilities, rehabilitation facilities, specialized institutions for providing social services, social care establishments with accommodation.

108. In recent decades, many countries have supported “deinstitutionalisation” strategies for LTC, promoting home-based care solutions, in order to match elders' preferences towards home-based ageing, and to contain LTC spending. Despite the deinstitutionalisation trends found in many countries, institution-based workers still represent the bulk of the workforce in most countries. In addition to enhancing home-based services, these countries have been promoting the use of community-based facilities such as for instance hospices for terminally ill, day-care centres, and homes for the disabled. More than half of countries have started to move LTC out of residential facilities, and towards the community.

109. While these policies answer elder's desire to remain at home the longest possible, their implementation raises new challenges for the LTC market. Specifically, countries need to increase the supply of home-based workers, but also make sure that nursing homes are prepared to face the associated change in their residents' profile (who will be more disabled). Highly skilled workers (nurses) are increasingly needed to cover the needs both at home and in institutions.

Figure 3.1. Trends in long-term care beds in facilities and hospitals, 2007-17 (or nearest year)



1. 2007 data refer to 2011.

Source: OECD Health Statistics 2019.

110. Staffing models of care have become an increasingly important factor for consideration within LTC policy, with a larger focus going to who provides care, how much, and with what qualifications. Within the institutional setting, facilities vary in terms of the kinds of staff they employ, ranging from physicians to nursing assistants. In particular, LTC facilities can be distinguished by staffing model and the availability of different on-site types of care providers

111. Table 3.1 shows different staffing models across six countries. All countries have available facilities with on-site nurses and care assistance and off-site physicians, with less countries also offering facilities with on-site physicians. The UK includes models where both nurses and physicians are off-site, and only care assistants are on-site (Honinx et al., 2019^[77]).

Table 3.1. Available types of facilities in six countries

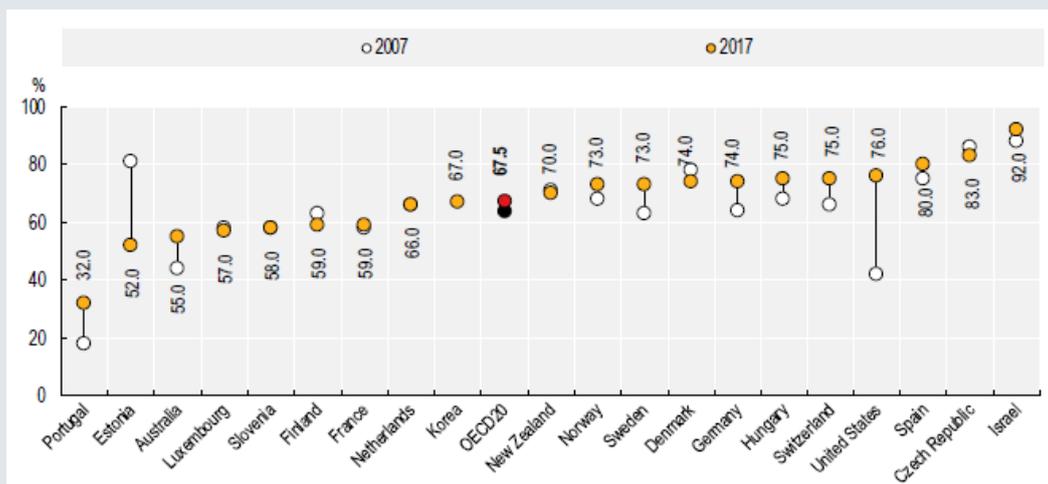
	Type 1 facilities with on-site physicians, nurses and care assistants	Type 2 facilities with on-site nurses and care assistants and off-site physicians	Type 3 facilities with on-site care assistants and off-site nurses and physicians
Belgium		X	
The Netherlands	X	X	
The United Kingdom		X	X
Finland		X	
Italy	X	X	
Poland	X	X	

Source: (Honinx et al., 2019^[77]).

Box 3.1. The home as health care setting

For many people receiving long-term care, the location of the care is their home, rather than a health care setting, such as a LTC facility. Between 2007 and 2017, the proportion individuals in OECD countries who received LTC at home increased by 4%, from 64% to 68%—with the largest increases in Portugal, Australia, Sweden, Germany and the United States (OECD, 2019^[2]). Home based health care is generally common. In Denmark, 20% of the population receives some kind of care at home (Fjordside and Morville, 2016^[7]). In the United States, over 2 million individuals receive home health care annually (Ellenbecker et al., 2008^[78]). Care delivered at home is on a spectrum—ranging from informal care to hospital at home. Other gradations of home health care include formal care services, skilled home health care, and home based primary care. (Lee et al., 2016^[79]) The highest number of LTC recipients receive the lowest levels of care at home, while the smallest proportion receive the most intensive services, hospital at home. Hospital at home involves complex and intensive care, which the absence of would require hospitalization. (Chevreul et al., 2004^[80]).

Figure 3.2. Long-term care recipients aged 65 and over receiving care at home, 2007 and 2017 (or nearest year)



Source: (OECD, 2019^[2])

The home is a truly individualized setting, where major aspects of the environment are determined by the resident, of which medical support is a component, unlike other medical settings where it is the primary function. There are several distinctive characteristics of home health care that pose unique challenges in ensuring patient safety and quality of outcomes: high individual autonomy of patients, self-management of care and care provided by family or informal caregivers, and the unique and individual setting created by each home environment (Ellenbecker et al., 2008^[78]). There may be significant differences in the patients that utilize home-based, as compared to institution-based, LTC. A study from Chinese Taipei found that recipients of institution-based care had less education, greater likelihood of being single, fewer family members higher prevalence of bowel incontinence and dementia, and greater disability than recipients of home-based LTC (Wu et al., 2014^[81]).

Given that care is delivered in a resident's home, those receiving care in home-based settings often have stronger roles in determining how and if care is delivered than counterparts in clinical or institutional settings. Individual preferences may not align with evidence based practices, and autonomy may at

times be at odds with best practices for patient safety or clinical care. Finally, care in the home is delivered in an environment over which clinicians have little control. Structural and environmental safety hazards may not be able to be ameliorated, resulting in higher risks of related adverse events.

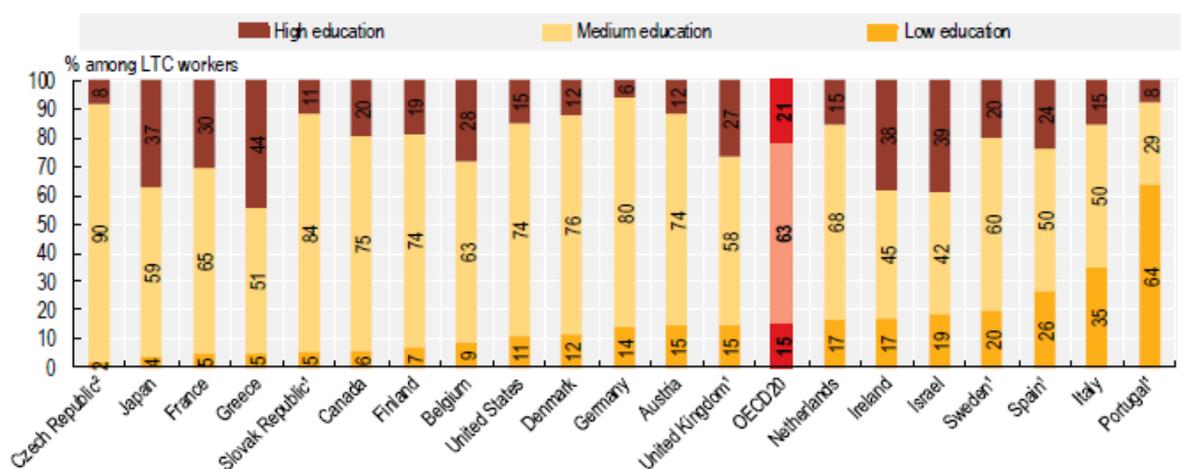
Employment in the home health care sector differs significantly from the hospital setting. Home health care nurses and caregivers often work alone in coordination with a central office. Nurses work with limited contact with physicians, and physicians often rely on nurse counterparts to assess patients and communicate care instructions. Professional caregivers often must coordinate with informal caregivers, over whom they have no authority and limited ability to influence the quality of care delivered (Ellenbecker et al., 2008^[78]).

Compared to hospital and institutional settings, prevalence of adverse events in home health care environments is relatively understudied. However, the research that exists indicates that safety issues may be common. Research in Canada found that there were over 13 adverse events experiences for every 100 home cases—most of which were related to falls or adverse drug events (Sears et al., 2013^[82]). Related research found that the majority of adverse events were attributable to the actions of the individual themselves, followed by the actions of health care personnel, and informal caregivers (Blais et al., 2013^[83]). Research from Sweden suggests the scope of the problem may be bigger, with adverse events identified in 37% of home health care cases examined (Schildmeijer et al., 2018^[84]).

3.2. Skills and competencies of the LTC workforce

112. Less than one-quarter of LTC workers hold tertiary education across the OECD (see Figure 3.3.). This can be explained by the fact that personal care workers represent 70% of the LTC workforce on average in OECD countries, and up to 90% in a few countries (Estonia, Switzerland, Korea, Israel, and Sweden). Only Germany, Hungary, and Switzerland have a supply of nurses greater than the supply of personal care workers. Very few countries currently require personal care workers to hold minimum education levels, licenses, and/or certifications. Despite being mostly staffed by lower skilled workers, LTC involves spending significant time delivering more complex tasks than basic care. Personal care workers do not always have sufficient knowledge and training, which can affect the quality of care delivered.

Figure 3.3. Long-term care workers by education level, 2016



Note: EU-Labour Force Survey data are based on ISCO 4 digit and NACE 2 digit. 1. Data were calculated based on ISCO 3 digit and NACE 2 digit. Data must be interpreted with caution, as sample sizes are small.

Source: (OECD, 2019^[2])

113. Care for older persons, particularly in institutions increasingly implies to master advanced skills. Care needs are becoming increasingly complex and workers are often inadequately trained for their tasks (OECD, 2020^[71]). The most common gaps in LTC workers' skills include: knowledge of geriatric conditions (dementia, frailty etc.), safety with caring role and manual handling, caring needs following hospital discharge, stress management, management of relationships with patients and their informal care network, crisis management, legal issues, bereavement coping, disability prevention, and use of new technologies.

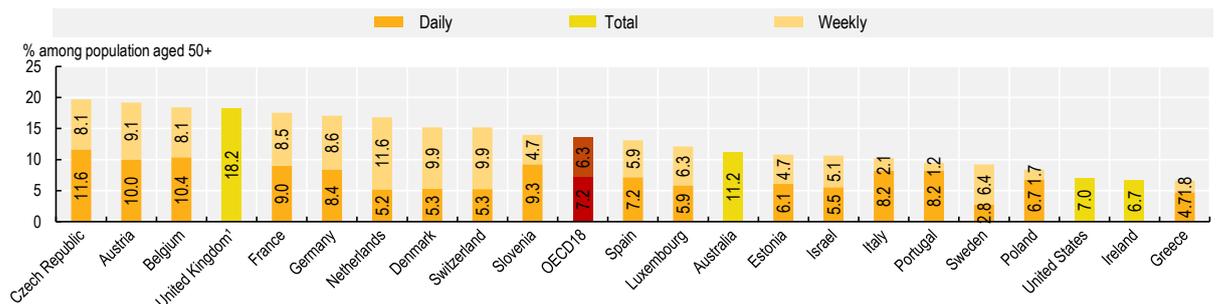
3.2.1. Private care provision is poised to take on a bigger role in LTC delivery

114. New actors are arriving on the market, benefiting from the public subsidisation of their services. Their business model often relies on helping older persons access public LTC allowances to reduce the cost of the LTC services they offer. The growing importance of these private companies raises questions on the privatization of LTC workforce, and LTC services delivery. With the increasing pressure on public budgets and the reduced availability of family care providers, it is expected that the private sector will play an increasing role in future LTC provision, by filling the gaps of the public service.

3.2.2. Informal care is a large source of care for LTC needs

115. Family and friends are the most important source of care for people with LTC needs in OECD countries. On average across OECD countries for which data is available, around 13% of people aged 50 and over report providing informal care at least weekly. The share of people age 50 and over providing informal care is close to 20% in the Czech Republic, Austria, Belgium, United Kingdom, France, and Germany, and less than 10% in Portugal, Sweden, Poland, the United States, Ireland, and Greece. There is also variation in the intensity of the care provided. The lowest rates of daily care provision are found in Sweden, Greece, Switzerland, Denmark and the Netherlands – in most of which the formal LTC sector is well-developed and public coverage is comprehensive.

Figure 3.4. Share of informal carers among population aged 50 and over, 2017 (or nearest year)



1. United Kingdom refers to England. The definition of informal carers differs between surveys (see Definition and comparability).
2. United Kingdom and the United States take into consideration informal weekly carers.
3. Australia takes into consideration informal carers altogether.

Source: Health at a Glance

116. The fact that fewer people provide daily care in countries with stronger formal LTC systems suggests that there is a trade-off between informal and formal care. Declining family size, increased geographical mobility and rising participation rates of women in the labour market mean that there is a risk that fewer people will be willing and able to provide informal

care in the future. Coupled with the effects of an ageing population, this could lead to higher demand for professional LTC services. Public LTC systems will need adequate resources to meet increased demand while maintaining access, safety, and quality.

3.3. Working conditions in LTC, health and safety of workers

117. Care workers in LTC face work conditions that are both physically and psychologically demanding. Workers in the sector have limited control over working conditions, high workloads, and often work on inadequate staffing arrangements. Very few countries have requirements for the education levels, licenses, and/or certifications for LTC workers. Despite limited medical qualifications, knowledge and training, LTC often requires the workers to complete complex, medically oriented tasks—potentially impacting the quality of care delivered (OECD, 2019^[2]).

118. In the United States, the Nursing Home Sector is reported to be the second most dangerous in terms of recognized work-related injuries and illnesses (Zhang et al., 2011^[85]). Workers face significant physical demands related to moving, transferring, and repositioning patients. Further, workers often care for complex patients with high demand for medical assistance, and cognitive impairments and dementia. A survey of workers in LTC cited staff concerns related to ergonomics as well as high prevalence of stress (Zhang et al., 2011^[85]).

119. Health workers in LTC are frequently exposed to workplace violence, the majority of which are caused by patients. A U.S. based study of nurses and certified nursing assistants working in LTC found that 65% of the participants had experienced work place violence (Fasanya and Dada, 2016^[86]). This is in line with research from Slovenia finding that over 60% of the nurses surveyed had been exposed to violence in the previous year (Kvas and Seljak, 2014^[87]).

120. The safety of workers in LTC is not only best practice, lack of safety is also costly. Efforts from Nova Scotia in Canada found that workers compensation claims for home care, long-term care and DSP workers were increasing rapidly. Estimates found that workers compensation premiums alone will cost employers in Nova Scotia up to CAD 51 million in 2023 (Province of Nova Scotia, 2018^[88]). The same study noted that the average days off work due to work-related injury were higher for home care and long-term care workers, by more than twice and almost four times the provincial average, respectively (Province of Nova Scotia, 2018^[88]).

Table 3.2 Common hazards faced by workers in LTC

Hazards	Description
Physical	A majority of residents are highly dependent on caregivers due to advanced age and the effects of health conditions. Caregivers frequently need to lift and provide other physical assistance to residents, placing caregivers at high risk of sustaining musculoskeletal injuries. In addition, the high prevalence of residents with psychiatric and cognitive disorders subject caregivers to aggressive behaviors that can result in injuries.
Biological	Advanced age and weakened immune systems cause residents to be at high risk for infection, and the close, regular contact caregivers have with residents exposes them to these infections.
Chemical	In the course of daily work activities, employees can be exposed to latex, hazardous drugs, and a variety of chemicals.
Work organization	Short-staffing, shift work, and reliance on overtime are not uncommon in nursing homes. The nature of the work and resident population contribute to chronic stress and its health threats.

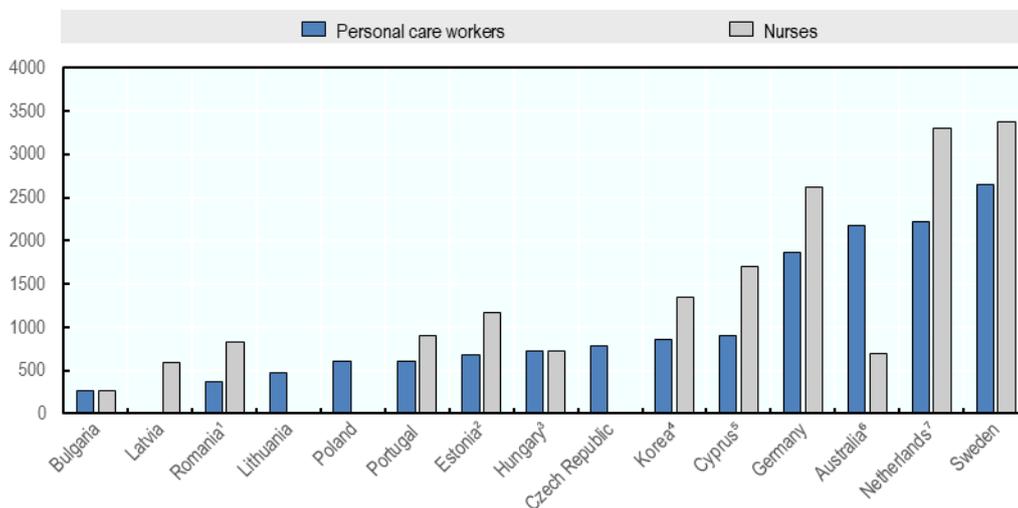
Source: (Eliopoulos, 2011^[89]).

121. Difficult working conditions, such as for instance too-long or too-short working hours, long commutes, nature of the work, low competitiveness of wages, and precarious job status, explain why it is difficult to retain workers in LTC careers. High turnover can disrupt continuity of care and reduce the quality of work as new workers need to learn the person's preferences, disrupts residents and results in a waste of resources from employers who need to spend time in recruitment and constant orientation efforts.

122. Current wages in the LTC workforce are low. Personal care workers have lower salaries compared with nurses, except in Bulgaria and Hungary where both nurses and personal care workers have the same salaries. In Portugal for instance, the average annual salary of a personal care worker is at around EUR 600 monthly, roughly the minimum salary wage. A nurse in the beginning of her career is paid EUR 900.

Figure 3.5. Average gross monthly earning of personal care workers and nurses

Average gross monthly earning in euro, in 2017 (or nearest year).



Note: 1-Data for personal carers and nurses refer to an average based on different qualifications. 2-Data for personal carers refers to an average based on different qualifications. 3-Breakdown is not available. 4-Data for nurses refers to an average based on different qualifications. 5-Data refer to the public sector. 6-Data refer to the median gross monthly earnings in residential aged care for personal carers and the median of gross weekly earnings in residential aged care for nurses. 7-Data for personal carers refers to an average based on different qualifications and data for nurses excludes irregular earnings.

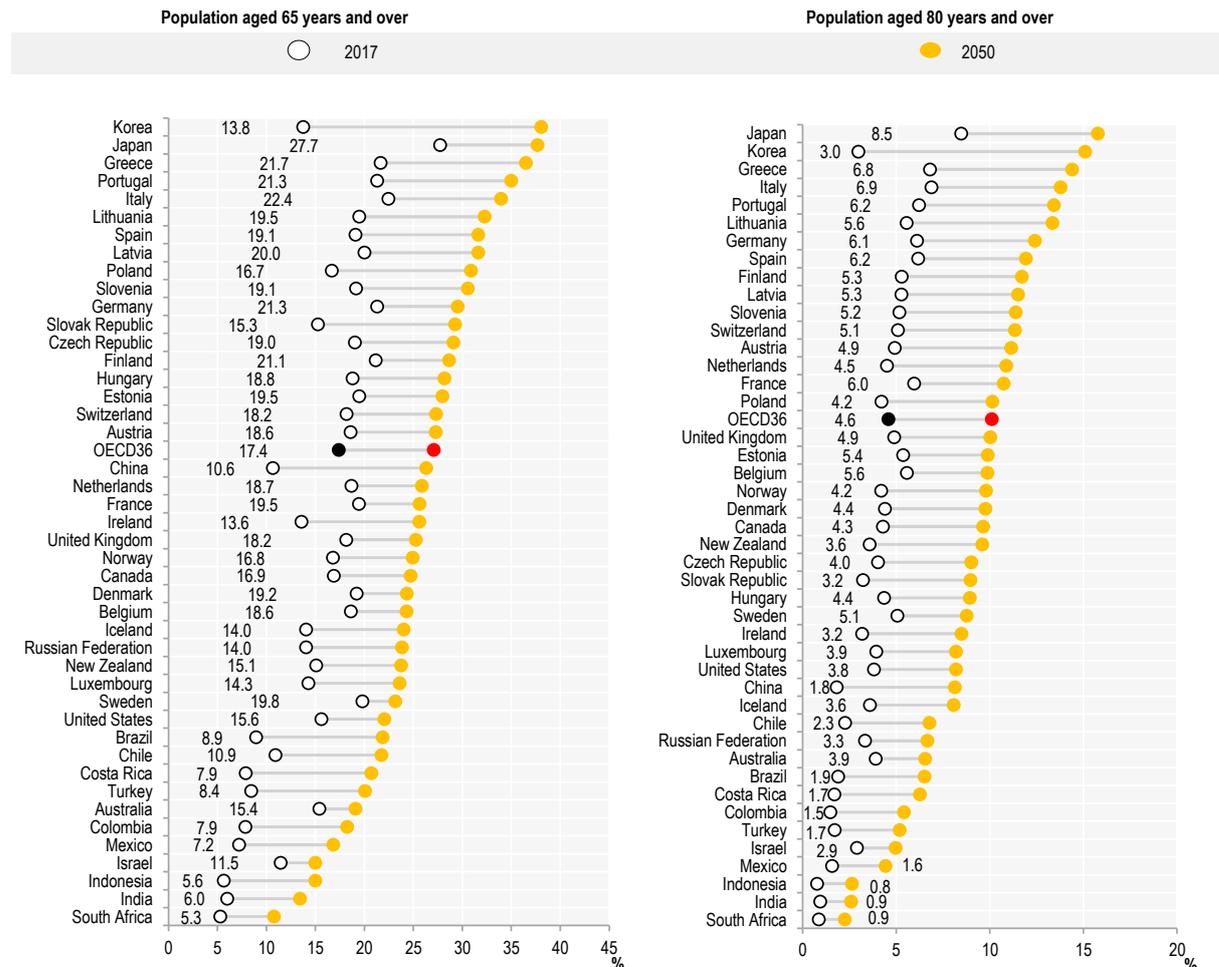
Source: (OECD, 2020^[71]).

3.4. There is an expected shortage of LTC workers due to demographic trends

123. Several trends have impacted demand over the past decade and will be adding pressure on the LTC workforce. First, OECD countries' populations are ageing rapidly.. Across OECD countries on average, the share of the population aged 65 and above is projected to continue increasing in the coming decades, rising from 17.4% in 2017 to 27.1% by 2050 (OECD, 2019^[21]). In five OECD countries (Italy, Portugal, Greece, Japan, and Korea) the share of the population aged 65 and above will exceed one-third by 2050. At the other end of the spectrum, the population aged 65 and above in Israel, Mexico and Australia will represent less than 20% of the population in 2050, due to higher fertility and migration rates.

124. While the rise in the population aged 65 and older has been striking across the OECD, the increase has been particularly rapid among the oldest-old – people 80 years of age and older. Between 2017 and 2050, the share of the population 80 and above will more than double on average in OECD countries, from 4.6% to 10.1%. At least one in ten people will be 80 or older in nearly half (17) of OECD countries by 2050, while in six countries (Lithuania, Portugal, Italy, Greece, Korea and Japan), more than one in eight people will be 80 or older.

Figure 3.6. Share of the population aged over 65 and 80 years, 2017 and 2050



Source: OECD Health Statistics 2019, OECD Historical Population Data and Projections Database, 2019.

125. LTC demand is also shaped by a change in disease mix (as most frail elders are high needs patients with multiple chronic conditions), and by new care expectations, centred on the patients' interests. Fast-ageing OECD countries experience increased dementia prevalence. In 2017, almost 19 million people lived with dementia in OECD countries, and dementia prevalence was reported to increase with age (OECD, 2017_[90]).

126. There is an increasing need for formal care services replacing or complementing the family care provision. The availability of family care providers may be decreasing in the future as birth rates have been declining for the past decades, more mobility is observed in the society, there are more nuclear families, and the number of working women has been growing (OECD, 2017_[90]).

127. Several OECD countries anticipate future shortages of LTC workers. In Japan, there are concerns that the increasing demand of formal LTC providers may lead to shortages. Despite an increase in its supply of LTC workers per 100 65+ elders, the Japanese government forecasts a need of 250,000 new LTC workers to meet the growing LTC demand by 2020 (OECD, 2020^[71]). In Australia, predictions show that the LTC workforce will have to recruit 980,000 new workers by 2050 in order to prevent shortages (Mavromaras et al., 2017^[91]).

128. Staffing shortages will be linked with national staffing level requirements in terms of both volume numbers and level of staffing competencies. According to 2017 data, there were just under nine nurses per 1 000 population in OECD countries in 2017, ranging from about two per 1 000 in Turkey to more than 17 per 1 000 in Norway and Switzerland (OECD, 2019^[2]). Over the last decade the number of nurses per capita has been increasing in most OECD countries, up from an average of 7.5 nurses per 1,000 in 2000. In a number of countries, including Slovak Republic, Israel, the United Kingdom and Ireland, the number of nurses per capita has been falling. Maintaining sufficient workforce volume is a pressing concern for many OECD countries, but skill mix and the competencies of that workforce will also be an increasing issue. Ensuring that the total number of caregivers and the competency of those workers will match demographic trends and LTC demand will require careful examination of policies to promote and enhance the availability of LTC workers.

3.5. Leadership, technology and patient safety culture have staffing impacts

129. Many LTC workers joined the sector by choice but the poor quality of the work environment leads them to quit. Workers have an interest in caring for the older persons because they value the interactions with elders and their families, the relationships with their colleagues, and the learning opportunities within the LTC sector. Despite these initial motivations, lack of autonomy and support, together with high demands puts a strain on the workers. LTC workers, particularly at home, are often isolated, yet workplace organisations and management tend to be hierarchical and regulated, leaving workers little possibility to make good use of their skills. This coupled with high caseloads and limited time with patients generates a feeling of frustration and overload.

130. Prior work underlines that a stabilization of nursing home leadership, in particular the director of nursing, can contribute to increase staff tenure (Hunt et al., 2012^[92]). Leadership that displays individualised consideration towards employees and provides intellectual stimulation can benefit organizational culture by providing role models and inspiring workers (Atwell, 2011^[93]). Encouraging discussion, involving employees in problem solving to improve resident care committees for informal learning and developing skills are some ways to stimulate employees in long-term care. The use of such leadership style, combined with championing evidence based practices, is also associated with improved resident outcomes such as reduction in pressure injuries and falls, as well as making workers feel valued and empowered in their work (RNAO, 2018^[94]).

131. One way to reduce the gap between demand and supply for LTC workers is by increasing efficiency or productivity in this sector. However, as a labour intensive market, promoting efficiency gains in the LTC sector is not a straightforward exercise. Many of the tasks carried out by health and social workers are difficult to standardise and need to be delivered by a person. Technological developments hold the promise to improve productivity or at least improve safety and job satisfaction for workers (RNAO, 2018^[94]) (Gillese, 2019^[17]).

3.6. Investing in health care workforce to improve patient safety

132. Health care workforce is one of the most pressing issues faced by the sector today. Shortages of workers are not the only problem. There are significant discrepancies between the services that are delivered in LTC and the competencies (knowledge and skills), of those who provide them. While the health profile, complexity of care needs, and dependency of residents has changed dramatically due to an older population entering nursing homes, the workforce mix and level has remained relatively unregulated and static. There is now a substantive gap between capacity and demand (Gillese, 2019^[17]).

133. In fact, the population of nursing homes has been notably dynamic in recent decades, which has created risk exposure for patients who live in LTC facilities without appropriately matched staff. National standards for safety in nursing homes and minimal staffing levels for registered nurses are examples of policies that countries have taken to address workforce competency, and to reduce the occurrence of safety incidents (Gillese, 2019^[17]).

134. As discussed in Section 2.2.7, LTC workforce should be involved in routinely assessments of facility safety, as is increasingly done in the hospital sector in a large number of countries. A recent literature review, for example, found that understanding of culture within social care settings is far less well developed than within hospitals (Gartshore, Waring and Timmons, 2017^[95]). This study found 18 studies assessing the safety culture in nursing homes in the US, 3 in Canada, and only one from each Australia, the Netherlands, and Switzerland. This research base is woefully inadequate given the relative scope and costs of safety events in LTC.

135. In today's environment, where many LTC facilities function as mini-hospitals, investment in an appropriately skilled workforce is pivotal to ensuring the safety of residents. Policy efforts must be designed in order to ensure that there are appropriate staffing levels for the management of medically complex nursing home residents. New models, such as those that are being developed in Germany (described in Box 2.2), which tailor nursing home staffing levels at the facility level hold significant promise for maximising the efficiency of the LTC workforce. New nursing role, such as the Attending Nurse Practitioner, being implemented in Ontario, Canada are also proving to improve the care, safety and outcomes of residents in nursing homes (MOHLTC, 2017^[96]).

136. Investing in more manpower is important, the existing workforce can also benefit from increased engagement in learning activities. Staff of all levels should feel empowered to document safety issues, suggest process improvements, and feel responsibility for facility outcomes. Culture change is not easy, or fast, but can have significant results. Patient safety culture and a healthy workplace for staff are closely intertwined—safer health care also implies safer workplaces for staff. Creating a good work environment for health care employees and improving patients' quality and safety of care are mutually reinforcing efforts. A good example of this is the Best Practice Spotlight Organizations being implemented successfully in 15 countries (Grinspun and Bajnok, 2018^[67]). Increased scope of practice and responsibilities can also contribute to enhancing the attractiveness of working in LTC facilities. To this purpose, a strategy process for inter-professional cooperation in the health and care sector is currently being developed in Germany by the Federal Ministry of Health.

137. Studies show the empirical relationship between patient safety culture and staff injuries. Low safety climate scores were associated with increased risks of work-related injuries in a study of hospitals in Costa Rica (Gimeno et al., 2005^[97]). Patient safety culture was found to be significantly correlated with reduced occurrences of back injuries (Mark et al., 2007^[98]) as well as needle-stick and sharp injuries of health care workers (Smith et al., 2010^[99]). While most of

these observations are correlational, a case study in a US hospital shows lower incidences of staff injuries as a consequence of a safety culture initiative (Hooper and Charney, 2005_[100]). Patient safety culture is also linked to the psychological well-being of staff. Several studies have observed a correlation with employees' mental health, showing that higher risks of burnout among health care staff are associated with the perception of low levels of patient safety (Gershon et al., 2007_[101]) (Halbesleben et al., 2008_[102]) (Hall et al., 2016_[103]). A recent cross-sectional survey study in the US found that a good work-life balance of health care employees correlates with better teamwork and safety climate (Sexton et al., 2017_[104]).

138. Research also suggests that improvements in perceptions of safety culture have a positive impact on job satisfaction and staff engagement. A study of hospitals in Canada shows that positive patient safety culture is related to high levels of employee engagement, patient-centred care, and employees' positive assessment of the quality of care provided by their team (Lowe, 2012_[105]). A recent study investigated the effect of a clinical patient safety culture initiative in the United States and found that it led to lower burnout rates as well as higher workforce engagement (Sexton et al., 2018_[106]). Thorp et al. find a relationship in the US between patient safety culture and decreased levels of workers' compensation claims (2012_[107]). Additional evidence shows that better patient safety culture may be connected to staff retention and lower turnover (The Health Foundation, 2011_[108]).

139. Studies from other sectors suggest that a culture of safety may enhance productivity. In health care, an economic case can similarly be made for patient safety culture as a way to achieve the long-term advantages of operational sustainability and quality of outcomes. Fostering a culture of patient safety is intimately linked to the healthy work environments that enable staff to consistently deliver high-quality and safe care services.

140. While investments in workforce come at a cost, they have the potential to reduce spending in hospitals, which comes at a much higher price. It is pivotal to look at spending in LTC within the context for the whole health system, and in particular in terms of its relationship with hospital care.

4 Economics of safety in LTC: Addressing the economic burden of safety risks and adverse events in LTC settings

141. There is an economic case for preventing harm in LTC. Preventable safety failures are pandemic to the LTC environment: falls, pressure injuries, inappropriate use of benzodiazepines and polypharmacy, and infections are key examples. But related and in addition to these manifestations of unsafe care, the vulnerability and dependency of people in long-term care exposes them to systemic neglect and abuse in their own homes.

142. All patients in LTC are exposed to one or more of these risks, with some estimates suggesting that almost 70% of residents will experience a serious adverse event in a given year (Datta et al., 2018^[109]). The harm resulting from these risks has significant human and financial costs. Yet, most of this harm is preventable, and the root causes of these events can be addressed through improved prevention and safety practices. Improvements, in even a limited number of key areas, can have a significant impact by mitigating the main cost drivers of adverse events in LTC.

4.1. Measurement and accountability

4.1.1. Patient safety in LTC institutions is often not well measured

143. While patient safety has become a central focus point in acute care, it has remained a lesser focus in LTC institutions. However, in the previous twenty years, there have been increased calls to broaden the safety agenda—and to ensure that LTC institutions are represented in the patient safety discussion (Rust et al., 2008^[110]).

144. LTC in particular has fewer measures of patient safety than in other sectors. Common metrics for assessing quality and safety typically include injurious falls, urinary tract infections, pressure injuries, and measures of medication errors (Brauner et al., 2018^[111]). The current literature suggests that the current metrics for assessing quality and patient safety may not be sufficient (Burke and Werner, 2019^[112]). For example, several common quality measures for LTC were not found to be associated with potentially preventable hospitalisations, a key outcome indicator of quality and safety (Xu, Kane and Arling, 2019^[113]). However, in the LTC setting, avoidable hospitalization is one in a myriad of goals. As discussed in Section 1.3.3, risk management must always be considered in the context of quality of life.

145. Research across EU countries has shown that the scope of measurement of quality and safety in LTC settings is relatively scarce. The report notes that a number of countries rely on patient satisfaction surveys to quantify the quality of care including Germany, Denmark, Lithuania, the Netherlands, Sweden, and the United Kingdom. A smaller set of countries,

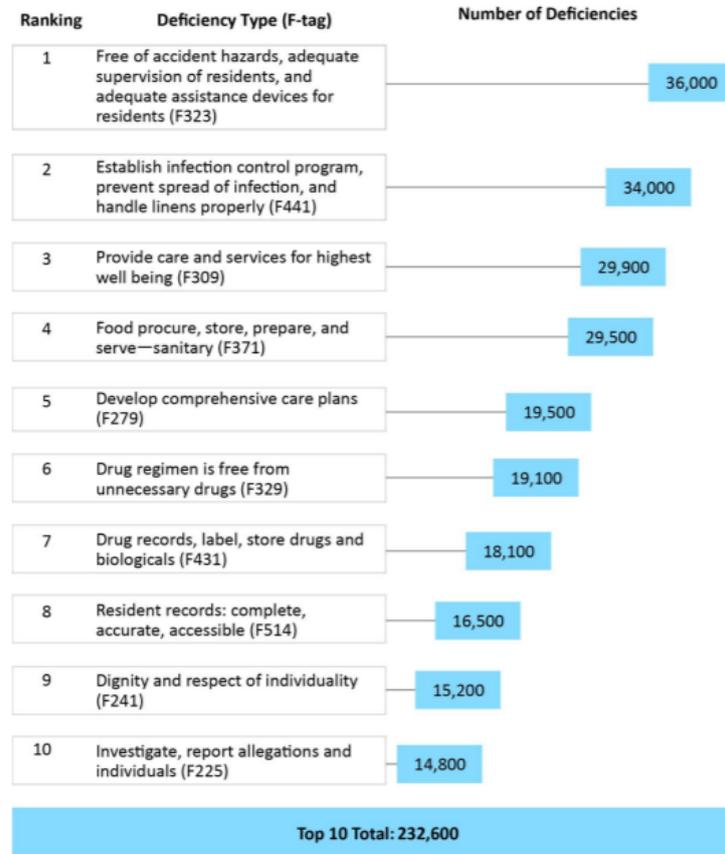
including Denmark, Finland, Norway, Portugal, and Sweden have national indicators created with the objective of increasing quality and safety of LTC residents (Spasova et al., 2018^[55]).

146. Ensuring a culture of safety is often an overlooked aspect of LTC. A study from the US compared safety culture in LTC facilities to acute care, finding that acute inpatient settings have a safer culture than in nursing homes—and that in some cases, the difference exceeded 50% (Castle and Sonon, 2006^[114]). Collecting information about patient safety culture is important for organisational learning and improvement, benchmarking and comparison. Crucially, measurement is not only beneficial to detect situations where things go wrong, but also to observe the settings and organisations where safe care is delivered consistently over time (OECD, 2018^[115]). However, safety culture has not been widely assessed in LTC settings. A scoping review of patient safety culture in long-term care homes found that there is a knowledge gap in terms of available evidence regarding safety culture of residential homes across countries. While there exist validated tools for use in care homes, there is limited evidence regarding how widely they are applied in LTC (Gartshore, Waring and Timmons, 2017^[95]).

4.1.2. Epidemiology of safety in LTC institutions shows adverse events and deficiencies are commonplace

147. Safety in LTC is intrinsically interconnected to the LTC environment, both physical and cultural. While data of quality is scarce for LTC, when found, the results of quality data can be disappointing. Data from the United States Office of the Inspector General (OIG) using CMS's Certification and Survey Provider Enhanced Reporting (CASPER) system found significant deficiencies among US nursing homes. The report found that over 30% of nursing homes had a deficiency type that was cited at least five times during the review period—and that the most common deficiencies related to exposure to hazards, adequate supervision, and adequate assistance devices for patients, followed second by issues related to infection control (OIG, 2019^[116]).

Figure 4.1: Top 10 Deficiency Types, Nursing Homes in the United States



Source: (OIG, 2019^[116])

4.1.3. Older persons are at higher risk for experiencing adverse events

148. Older populations are at a heightened risk of adverse events. As described in Section 1.1.2, older populations are more likely to have multiple chronic conditions or multimorbidity. Prevalence of multiple diseases leads to an increase in prescribing, and polypharmacy is a serious risk factor for drug interactions or other adverse events. Further, older populations are unique in terms of their health and disability status, and cognitive deficits (Davies and O’Mahony, 2015^[117]).

149. LTC residents often have complex individual care needs, resulting in complex care and treatment plans. Treatment pathways are made more so by the heterogeneous nature of older populations and lack of standardization care guidelines. Most guidelines and care pathways are designed for individual conditions, however most LTC patients live with multiple chronic conditions, posing challenges for care alignment and delivery. Finally, clinical practice guidelines are often informed by the results of research from which the older persons have been excluded (Davies and O’Mahony, 2015^[117]). This means that care pathways are not always designed with LTC patients as the intended population, and, given the significant differences, that care may not have the intended effect or may even have adverse consequences.

4.2. Types, risk and frequency of adverse events in LTC

4.2.1. Discussion of common adverse events

150. Adverse events are endemic to the LTC environment. Estimates vary on how often adverse events occur, with some studies suggesting that almost 70% of LTC recipients will experience a serious adverse event in a given year (Datta et al., 2018_[109]) Furthermore, nursing care and other care related errors are often underreported, so the real scope of the problem may be underestimated (Andersson et al., 2018_[6]).

151. As patients' needs become more complex, they are more likely to experience an adverse event. In addition, for residents that live in a nursing home for multiple years, the likelihood that they will **not** experience an adverse event becomes increasingly small as they interact with the health care system for longer periods of time.

152. In addition to being commonplace occurrences, most adverse events are also preventable. A study of preventable events in Medicare patients in LTC hospitals found that over half of events were preventable, and the majority of these would have been prevented if not for substandard care and medical errors (See Table 4.1) (OIG, 2018_[29]).

Table 4.1. Rationales for Events Determined Preventable in Study of US Medicare Patients

Rationales for Preventable Events	Percentage of Preventable Events*
Substandard treatment / preventive care	58%
Error was related to medical judgment, skill, management	34%
The patient's progress was not adequately monitored	25%
Patient care plan was inadequate	23%
Clinicians did not provide necessary treatment	18%
Equipment failure or other breakdown	3%
Poor communication among caregivers	2%
Lack of access to a physician or specialist	2%
Admission assessment was inadequate for the patient	2%
Other	12%

Source: OIG analysis of LTCH stays for 587 Medicare patients who entered an LTCH in March 2014.

*Reviewers often selected more than one rationale per event.

Source: (OIG, 2018_[29])

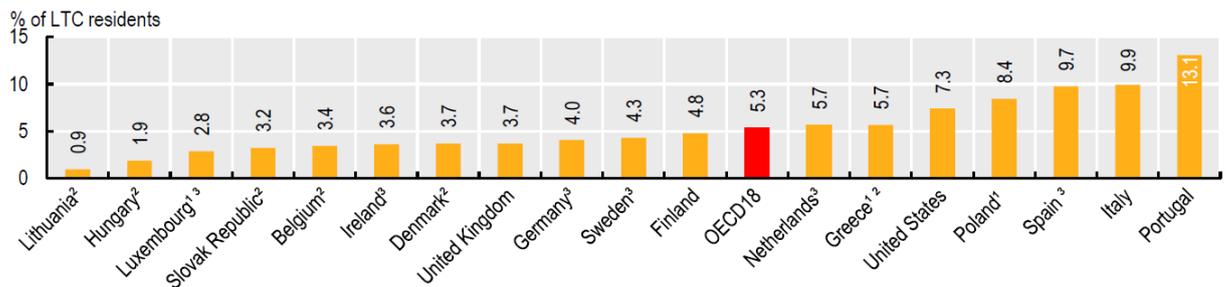
153. There are numerous common adverse events and corresponding underlying causes. Patients in LTC are often exposed to pressure injuries, benzodiazepines and opioid overuse, polypharmacy, falls, infections and AMR, abuse and neglect, and malnutrition. These events, their underlying causes, and impacts on health and health spending, are described in the following sections.

4.2.2. Pressure injuries

154. A pressure injury, sometimes called pressure ulcer, is a "localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear" (National Pressure Ulcer Advisory Panel, 2014_[118]). Pressure injuries may cause pain and discomfort to those affected. They also place a person at risk of complications, such as infections and sepsis (Spear, 2013_[119]). In addition to affecting the

quality of life, morbidity and mortality of those affected, they also have an impact on their informal caregivers and health care workers. According to recently published data (OECD, 2019^[2]) the prevalence of pressure injuries of all stages in long-term care facilities was between 0,9% and 13,1% among OECD countries for which data were available.

Figure 4.1. Percentage of long-term care facility residents with at least one pressure ulcer, 2016-17



Note: 1. Under 45% of residents sampled were wheelchair-bound or bedridden. 2. Over 45% of residents sampled were wheelchair-bound or bedridden. 3. No data available on the proportion of wheelchair-bound or bedridden residents.

Source: (OECD, 2019^[2])

155. The prevention and treatment of pressure injuries involves a number of activities, ranging from risk assessments to changes in nutrition and use of support surfaces (RNAO, 2016^[120]). Estimated of the total costs of pressure injury care depend partly on the interventions being considered. Most existing research on costs associated with pressure injuries assess the costs of alternative prevention and treatment options. Preventive activities may be cost saving or have an incremental cost, depending on the activities being considered or compared (Pham et al., 2011^[121]). In general, higher pressure injury stages have been associated with higher treatment costs (Makai et al., 2010^[122]) (Severens et al., 2002^[123]) (Demarré et al., 2015^[124]).

156. It is not yet clear if preventive activities lead to cost saving. Research from Canada found that increases in pressure injury were associated with lower per diem costs in long-term care (Wodchis, Teare and Anderson, 2007^[125]). However the relation between incidence and cost was not linear. Research from the US found a similar relation of increasing costs for better quality of pressure injury care at lower levels of quality. This relationship however changes, showing lower costs for better quality once a quality level is reached (Weech-Maldonado, Shea and Mor, 2006^[126]). Costs in these cases are calculated from the perspective of the long-term care facility. According to Horn (2008), if a societal perspective is taken, then increases in nurses direct care time, which is usually the most important cost component of pressure injury care, leads to a net societal benefit, which was estimated in the USA at the time of publication to be approximately USD 3,200 per resident per year in nursing homes deemed to be at high risk (Horn, 2008^[127]).

157. From a nursing home perspective, a study in Belgium found the costs of pressure injury associated activities between 2008 and 2013 in Flemish nursing homes to be €0.50 per resident per day for residents not a risk—and €2.15 per resident per day for residents at high risk of developing pressure ulcers (Demarré et al., 2015^[124]). When those developed the costs of local treatment per resident per day ranged between €2.42 and €16.18. A more recent study in Australia found the treatment cost of pressure injuries in nursing homes per day to range between AUD 10.22 for unstageable pressure ulcers and AUD 30.01 for a stage III pressure ulcer (Wilson, Kapp and Santamaria, 2019^[128]). These results are consistent with those realized

by Bonner and colleagues were savings in several adverse events and increased satisfaction, resulted from the use of evidence-based practices (Bonner, et al, 2018).

158. When the costs associated with pressure ulcer have been estimated in the aggregate those were very high. Estimates of the total medical costs of pressure ulcers were found to be USD 3.27 billion in 2008 or 0.17% of total health care costs in the US that year (Van Den Bos et al., 2011_[129]). However the estimate was limited to the analysis of medical claims. Similarly, a study of the cost of pressure injuries to the National Health Service (NHS) in the UK, amounting to almost £531 million, did not include nursing homes residents, while a previous study estimated the NHS annual costs of pressure ulcers, including nursing homes, in 2005-2006 to be between £1.8 and £2.6 billion pounds or between 2% and 2.9% of total health expenditure in UK in that year (Guest et al., 2017_[130]), (Posnett and Franks, 2008_[131]).

159. A study from the Netherlands estimated the costs of care of pressure ulcers per day in different settings for residents with pressure ulcer and for those at high risk of developing one. Their estimates of annual costs of pressure ulcers in the Netherlands ranged between USD 152 million and USD 807 million representing between around 0.5% and 2.7% of total health care costs at the time (Severens et al., 2002_[123]).

160. Taking into considerations changes in prevention and treatment protocols and differences in work force costs between countries, it is difficult to estimate the costs of prevention and care of pressure ulcers in nursing homes across countries. It is nonetheless clear that pressure ulcer prevention and care represent a considerable share of the costs of nursing home care. It is also clear that the situation can be improved as shown by the nursing homes that have joined as Best Practice Spotlight Organizations of RNAO which have shown significant saving (Holmes, et al, 2018). Targeted investments in prevention have been found to be effective in reducing the prevalence of pressure ulcers. For example, investments in both lower cost foam-based, low-pressure mattresses and overlays, and also by higher-specification pressure-relieving beds and mattresses have been found to outperform traditional hospital beds in preventing pressure ulcers (McInnes et al., 2015_[132]). Targeted investments can also be made in a range of risk assessment tools, dressings, support services and nutrition, which have also been found effective in the management and prevention of pressure injuries (RNAO, 2016_[120]).

4.2.3. Unnecessary antipsychotic use

161. Overmedication is a concern in nursing homes that may affect an individual's ability to function. Antipsychotic medications are often used to treat agitation/aggression in individuals with dementia in LTC settings—but have numerous side effects that can lower quality of life, in addition to increasing morbidity and mortality (Thompson Coon et al., 2014_[133]) (Brasure et al., 2016_[134]). A meta-analysis on the subject has found antipsychotics only have modest efficacy in treating psychosis, aggression and agitation in individuals with dementia while increasing risk of death and cerebrovascular adverse events (Tampi et al., 2016_[135]). Despite the risks, antipsychotic agents are often prescribed for long periods without regular medication review.

162. Restless, aggressive, or disruptive behaviour is associated with dementia onset, and is often challenging for family and paid caregivers to navigate (Choosing Wisely, 2013_[136]). As a result, many patients are treated with antipsychotics to address these behaviours and use of antipsychotics in nursing homes is prevalent.

163. Across 17 OECD countries in 2017, over 5% of adults ages 65 and older received a prescription for antipsychotic medicines (OECD, 2019_[2]). A study of nursing home residents in the U.S. found that over 20% of residents had received one or more prescription for

antipsychotics (Briesacher et al., 2013^[137]). Studies examining antipsychotic use in nursing home residents in European countries have found that use ranges from 12 to 59 percent (Janus et al., 2016^[138]). Research from Norway has found that longer nursing home length of stays were positively associated with likelihood of persistent use of antipsychotics (Helvik et al., 2017^[139]).

164. The costs of potentially inappropriate medication (PMI) use for LTC recipients are significant, and highly variable across countries and regions. Research from Australia finds that approximately 16% of all medications dispensed in a 12 month period in residential aged care facilities were potentially inappropriate medications. A reduction by half of inappropriate prescriptions was modelled to result in direct savings on medication costs of approximately AUD 38 million annually in Australia (Harrison et al., 2018^[140]). Research of LTC residents in Norway found that over 40% of residents were prescribed at least one PMI (Nyborg et al., 2017^[141]). Similarly, research from Korea in the LTC setting found that over 50% of prescriptions may be inappropriate, with central nervous system drugs being the most commonly prescribed inappropriate medications (Hwang, Kim and Lee, 2015^[142]). Higher still, a study of LTC residents in Halifax, Nova Scotia, Canada, suggests that over 80% of prescribed medicines may be PMIs (Andrew et al., 2018^[143]).

165. The question of addressing the use of anti-psychotic drugs is often one of staff training and capability. For example, lack of staff resources to consistently implement non-pharmacological management strategies has been identified as a barrier to the reduction of prescribing antipsychotics to nursing home residents (Simmons et al., 2018^[144]). Targeted investments in staff training and non-pharmacologic approaches to care for behavioural disturbances can be effective in reducing antipsychotic use for patients with dementia (SAMHSA, 2019^[145]).

Box 4.1. Reducing unnecessary antipsychotic use in long-term care in Alberta, Canada

Antipsychotics are often used to treat behavioral symptoms of dementia in seniors, which can become more pronounced in the long-term care (LTC) setting. Unnecessary antipsychotics are harmful as they increase confusion, falls, pneumonia and delirium. Choosing Wisely Canada recommends against using antipsychotics unnecessarily.

A Canadian Institute for Health Information (CIHI) report indicated 39% of seniors in LTC facilities across the country had taken an antipsychotic medication in 2014, with 22.4% percent of residents being chronic antipsychotic users (CIHI, 2016^[146]).

In 2012, Alberta introduced Strategic Clinical Networks as part of the provincial health system, which serves 4.3 million people in western Canada. These networks have a mandate to create improvements within focused areas of health care. The work of the Seniors Health Strategic Clinical Network (SCN™) includes projects in nursing homes, hospitals, primary care and the community.

The Appropriate Use of Antipsychotics (AUA) intervention was first tested in 11 LTC facilities in 2013 and refined prior to being introduced to all 350 nursing homes in the province; a total of 25,740 beds.

The intervention included collaboration between clinical disciplines, including nursing, pharmacy and medicine. The interdisciplinary teams assessed appropriate use of antipsychotics and tapered residents off potentially inappropriate antipsychotic prescriptions. Further, the teams introduced supportive strategies to prevent and manage behaviours. These included person-centered approaches, support of sleep, meaningful activities, and including [families as partners in care](#).

A toolkit on the Appropriate Use of Antipsychotics was developed to share resources with continuing care facilities in Alberta (Alberta Health Services, n.d.^[147]).

It has been nearly six years since the AUA intervention was introduced. Antipsychotic use decreased significantly, from 26.8% in 2013 to 17% in 2018. Qualitatively, both staff and family members have highlighted that residents are more alert and independent.

The Seniors Health SCN is working to sustain appropriate use of antipsychotics, with a new project targeting pain and mood. There are many factors influencing behavioural expressions of distress, including pain, loss and grief, burden of disease, social isolation and medication side effects.

The AUA Project has had an impact beyond Alberta, as it has been shared in national media (Alberta Health Services, n.d.^[148]), along with [videos](#), peer-reviewed journal articles (Stock et al., 2017^[149]), and presentations. Further, Choosing Wisely Canada developed a toolkit based on the AUA intervention “When Psychosis Isn’t the Diagnosis” (Choosing Wisely Canada, 2019^[150]).

Source: Case for OECD, written by Karen Born and adapted from Commonwealth Fund Choosing Wisely Web series: <https://www.commonwealthfund.org/publications/case-study/2019/may/choosing-wisely-recommendation-6> reviewed by Verdeen Bueckert, Alberta Health Services

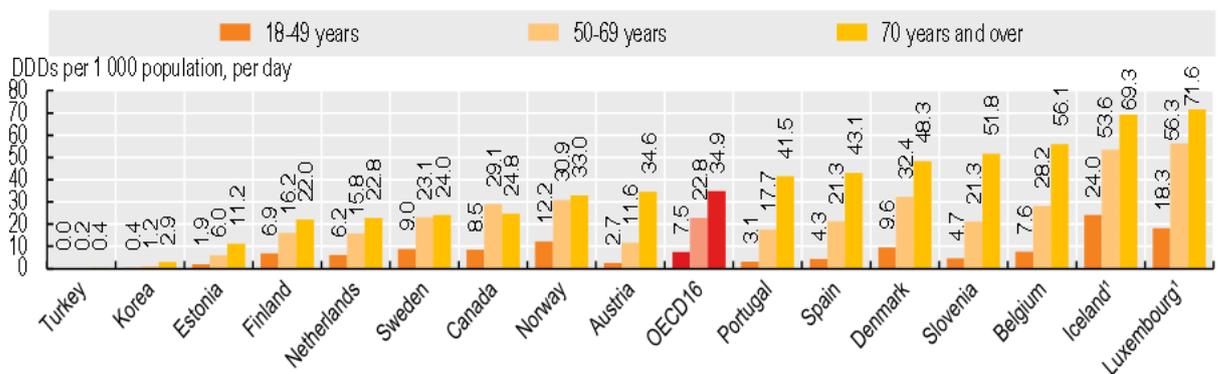
4.2.4. Opioids

166. Opioids can be a good therapeutic alternative to manage pain in people living in LTC facilities, especially because it has been found that LTC residents might be undertreated for pain (La Frenais et al., 2018^[151]). However, adverse events can occur, particularly when opioids are over-prescribed, including nausea, constipation and bladder dysfunction, along with potential opioid addiction disorders. Furthermore, polypharmacy is common in older persons where drug interactions can cause more cognitive impairment and fall injuries (Kim et al., 2018^[152]). In this scenario, opioid over-use can increase health care utilisation, for instance,

being associated with high rates of emergency admissions among older adults (Lown Institute, 2019^[153]).

167. Figure 4.2 indicates that across all countries except Canada, the overall volume of opioids consumed is highest among people aged 70 years and over. On average across 16 OECD countries, older people consume 1.5 times more than the average volume of those aged 50-69, and nearly five times more than the volume consumed by those aged 18-49. Luxembourg shows the highest opioids volumes among older adults, and Turkey the lowest. This variation can be explained in part by differences in clinical practice in pain management, as well as differences in regulation, legal frameworks of opioids, prescribing policies and treatment guidelines.

Figure 4.2. Opioid prescriptions across age groups, 2017 (or nearest year)



Note: Data excludes products used in the treatment of addiction.

1. Three-year average.

Source: OECD Health Statistics 2019.

168. Opioid-induced constipation (OIC) is a common adverse event in the older population and has been more analysed from an economic perspective. A study in Denmark comparing OIC found that non-cancer and cancer patients with OIC had 34% and 25% higher total health care costs compared to those without OIC ($P < 0.001$), respectively, after adjusting for age, gender, opioid usage, marital status and comorbidities (Søndergaard et al., 2017^[154]). Similarly, a United States study found that cancer patients with constipation were more than twice as likely as those without constipation to have an all-cause inpatient hospitalisation (OR 2.47 [2.11-2.90]) or pain-related hospitalisation (2.15 [1.82-2.54]) during the 12 months after initiating opioid therapy. Overall health care costs were USD 21,629 (USD 14,850- USD 29,018) higher for patients with constipation than for those without constipation (Fine et al., 2019^[155]). These studies could be extrapolated to what can be happening in the older population or in LTC facilities, but specific research to answer these questions is needed.

169. In general terms, there is a prominent lack of economic analyses about the costs associated to opioid over-prescription in LTC institutions and older residents. Likewise, a similar scarcity of research can be found for economic evaluations about interventions to promote a more rational use of analgesic opioids in LTC settings.

170. As with antipsychotics, there are alternative, non-pharmacological, methods for pain management, but many of these require additional staff resources. Physical therapy and complementary medicines—such as acupuncture and massage, have potential to reduce pain without the serious side-effects and risks of opioids. Non-opioid pain medications, such as such

as ibuprofen, acetaminophen (paracetamol), aspirin, and steroids can also be used as alternatives.

4.2.5. Polypharmacy

171. Ageing and multimorbidity often require older patients taking multiple medicines (polypharmacy) for long periods of their lives. While polypharmacy in many cases is justified for the management of multiple conditions, there is a need to distinguish between appropriate and inappropriate polypharmacy, unfortunately there is currently no consensus among experts on the issue (Masnoon et al., 2017^[156]). *Appropriate prescribing* of multiple medications to patients with complex and/or multiple conditions is defined as when medication usage is aligned with the best evidence available and reflect the patients' clinical needs (Cadogan et al., 2015^[157]). Conversely, *inappropriate polypharmacy* includes potential inappropriate medications, medication overuse and duplications (Masnoon et al., 2017^[156]).

172. Polypharmacy is associated with considerable safety risks, and is being targeted one of the three key action areas of the third World Health Organization (WHO) Global Patient Safety Challenge (WHO, 2019^[158]). As exposure to polypharmacy among the oldest and frailest patients increases the risk of harm, prescribers should consider whether continued treatment is justified and the added clinical value of preventive treatments (Dubois et al., 2018^[159]). Nevertheless, time constraints, automated prescription routines (e.g. automatic refills of ePrescriptions), lack of risk/benefit information, and lack of guidelines supporting de-prescribing, are all factors explaining why this rarely occurs in daily practice (van Middelaar and van Charante, 2018^[160]; le et al., 2017^[161]).

173. Polypharmacy is associated with poor adherence, drug-drug interactions, medication errors and adverse drug events (ADEs)³—including falls, hip fractures, confusion and delirium. About one in three community-living older adults subject to polypharmacy experiences an ADE and the risk of experiencing an ADE increases with each additional medication (Scott and Jayathissa, 2010^[162]; Viktil et al., 2007^[163]). Patients experiencing an ADE often need acute care, which can result in avoidable emergency admissions, extended hospital stays, additional investigations and closer monitoring over time (Monégat, 2014; Gallagher, 2007).

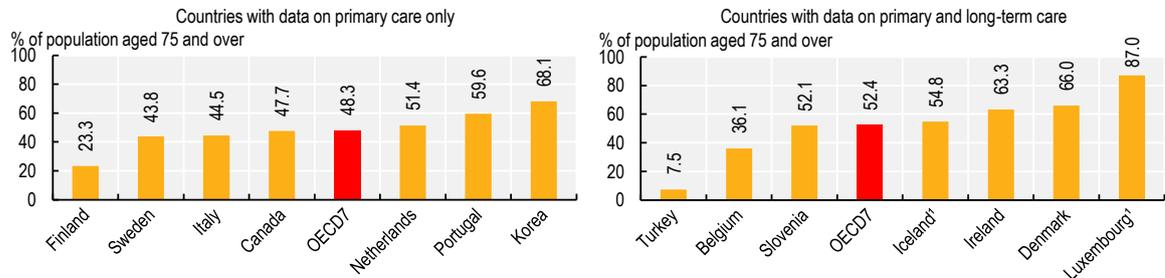
174. This manifests into potentially significant health and economic burden associated to inappropriate polypharmacy in LTC institutions and older residents for which evidence is generally scarce. Latest figures for the United States refer that 750 older adults are hospitalised due to serious side effects from one or more medications *every day*, corresponding to 2 million hospital admissions over the last decade (Lown Institute, 2019^[164]). Europe also faces considerable burden of ADEs. A systematic review estimated that 3.6% of all hospitalisations in Europe are caused by an adverse drug reaction, and as many as one in 10 patients experience an adverse drug reaction while being admitted to hospital (Bouvy, Bruin and Koopmanschap, 2015^[165]).

175. In 2019, for the first time, the OECD collected international comparable data on polypharmacy rates, measuring the proportion of older people concurrently taking more than five medications chronically. Across a selection of 14 countries with broader data coverage, polypharmacy rates among older people vary more than 11-fold across countries with broader data coverage, with Turkey reporting the lowest rates and Luxembourg the highest. Among countries with only primary care data, polypharmacy rates vary almost three-fold, with Finland

³ Adverse drug events (ADEs), an umbrella term that encompasses adverse drug reactions (ADRs), medication errors, overdoses, dose reductions and cessation of therapy, are common in the elderly

reporting the lowest rate and Korea the highest (Figure 4.3). These numbers go in line with previous at national level (Morin et al., 2018_[166]).

Figure 4.3. Polypharmacy in adults aged 75 and over: primary and long-term care, 2017 (or nearest year)



Note: ¹ Data represent a three-year average. Chronicity is defined based on use above 90 Defined Daily Dosage/days in a given year, except in results for Turkey, Ireland, Denmark, Finland and Portugal, which instead use number of prescriptions (four and over) in a given year. Dermatologicals for topical use are excluded.

Source: Health at a Glance 2019.

176. These large variations can be partly explained by the establishment of targeted polypharmacy initiatives in some countries, including related reimbursement and prescribing policies. Different initiatives have demonstrated that reducing inappropriate polypharmacy is possible while preventing medication harm. For instance, greater involvement of pharmacists in care and regular medicine review of polypharmacy patients has been shown to reduce inappropriate prescribing and the frequency of ADEs, without adversely impacting health-related quality of life (Garcia and Joseph, 2006_[167]). In addition, better collaboration between community pharmacists and GPs seems to improve appropriate polypharmacy in older patients and facilitate decision-making in complex prescribing and de-prescribing decisions (Cadogan et al., 2015_[168]; Sinnige et al., 2016_[169]).

177. In addition, de-prescribing of medicines that show low clinical value has been referred as the most obvious way to reduce inappropriate polypharmacy, particularly among older persons, who often experience an increase in polypharmacy in the last year of life. The implementation of medication review and closer follow-up of polypharmacy patients by community pharmacists are associated with substantially lower hospitalisation rates due to ADEs as well as reduction in hospital costs (Trygstad et al., 2009_[170]; Malet-Larrea et al., 2016_[171]).

178. Some health systems have implemented digital prescribing tools adapted to polypharmacy. This includes new digital tools to record and share knowledge about safe prescribing and de-prescribing (Bruyère Research Institute, 2019_[172]); and 'de-prescribing networks' consisting of researchers, pharmacists, doctors and patient to develop strategies for safety medication and de-prescribing (Canadian Deprescribing Network, 2019_[173]). At the international level, the European Union created a consortium of experts in the project called Stimulating Innovation Management of Polypharmacy and Adherence in The Elderly (SIMPATY) that seeks to explore how management programmes can be implemented to improve medication safety and prevent patient harm by addressing the appropriate use of polypharmacy (European Union, 2019_[174]). Notwithstanding, there is lack of research on economic evaluations about the impact of various interventions to reduce polypharmacy-related harm in LTC settings.

4.2.6. Falls

179. A related and common adverse event in LTC settings is falls. Approximately 30-50% of LTC residents fall each year, and almost half of these residents experience multiple falls (WHO, 2007^[175]). In part, falls in LTC facilities have been attributed to environmental factors (rugs, low mattresses, improperly installed or used equipment, time of day) as well as issues related to the organization of care (time constraints faced by staff, communication about changes in resident cognitive status, limited occupational therapy) (Welch et al., 2017^[176]). Research suggests that an increased incidence of falls, recurrent falls, and injurious falls are also associated with polypharmacy (taking ≥ 4 drugs) (Zia, Kamaruzzaman and Tan, 2015^[177]).

180. Risk management activities for falls are particularly complicated. A significant body of literature identifies fear of falling as both a risk factor for further falls, as well as a consequence of previous falls (Lavedán et al., 2018^[178]) (Young and Mark Williams, 2015^[179]). Activities to restrict resident movement and mobility can also lead to inverse outcomes, as this may lead to physical deterioration, which increases the likelihood of falls (Growdon, Shorr and Inouye, 2017^[180]). Some studied mechanisms to prevent injury, such as requirements that residents wear hip protectors, are often rejected by residents as being patronizing and not personally applicable (Hajek et al., 2018^[181]). The use of physical restraints in fall prevention is considered indicative of low quality care, but is still commonly used. A study of nursing homes in Switzerland found that over 25% of residents had at least one physical restraint (Hofmann et al., 2015^[182]). In France, the use of restraints in long-term care nursing homes ranges from 19 to 84% depending on the setting (ANAES, 2000^[183]). There is a significant gap in the literature related to LTC residents' autonomy and preferences with respect to falls prevention strategies. Evidence-based approaches to decrease the use of restraints and at the same time lower the rates of falls, are taking place with great success through capacity building of best practice champion networks (RNAO, 2012^[184]) (RNAO, n.d.^[185]).

181. Falls in LTC facilities contribute to high burden in terms of injury and mortality, as well as substantial costs for subsequent hospitalizations and rehabilitation for incurred injuries. Estimates in the US have placed annual medical cost of falls at over USD 50 billion—and the average cost for treatment following a fall is estimated to be close to USD 14,000 (CDC, 2016^[186]) (The Joint Commission, 2015^[187]). Investment in fall-prevention programs and broader quality improvement initiatives such as described in Box 4.2 can reduce falls, and contribute to costs savings across the LTC and acute care systems.

Box 4.2. The economic impact of fall prevention guidelines in Ontario

Evidence-based falls prevention and management strategies are essential in LTC homes as older adults have a higher risk of falls and falls injuries (CIHI, 2019). The Registered Nurses' Association of Ontario (RNAO) Best Practice Guideline (BPG): Preventing Falls and Reducing Injury from Falls Fourth Edition (2017), is an evidence-based resource that outlines recommendations for nurses and the inter-professional team, educators, administrators and policy-makers on effective strategies for preventing falls and reducing injury from falls.

Figure 2 represents a longitudinal analysis of LTC resident falls in the past 30 days using data from the Canadian Institute of Health Information (CIHI). The CIHI dataset analysed included data submissions from all LTC homes across Canada from 2013 to 2018. In Figure 1, Cohort A represents seven LTC-Best Practice Spotlight Organizations (BPSOs) that joined the BPG program in 2014 and committed to

implementing the RAO Falls BPG (RAO, 2012_[188]). Data from Cohort A was analysed and compared to two high performing provinces and the provincial and national averages. The highlights are:

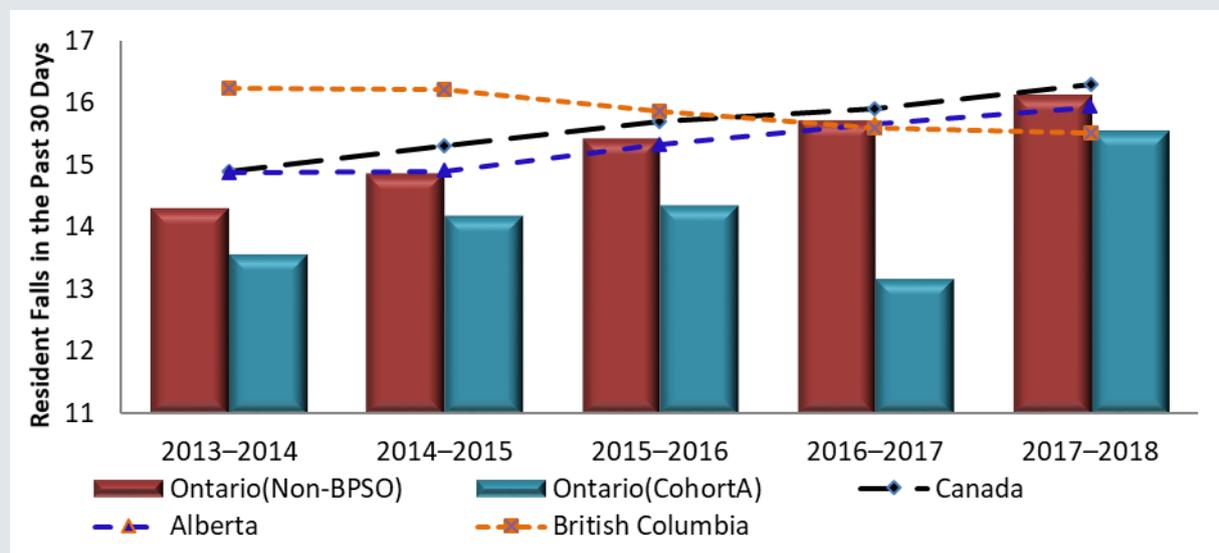
Cohort A demonstrated a lower percentage of resident falls in the past 30 days in comparison to the average resident falls in British Columbia; 2.7% lower in 2013 and 2.5% lower in 2017.

In comparison to Alberta Cohort A also demonstrated a lower percentage of resident falls in the past 30 days; estimated to be 2.5% lower in 2017.

There is estimate of 1.12% reduction in percentage of resident falls in the past 30 days for Cohort A in comparison to Ontario non-participating LTC homes.

Of importance is the increase in average number of resident falls in the last 30 days in 2018 for all of Ontario (non-BPSO and Cohort A) which is an important area to investigate – however, Cohort A BPSOs still performed better than Ontario non-BPSOs.

Figure: Average Resident Falls in the Past 30 Days



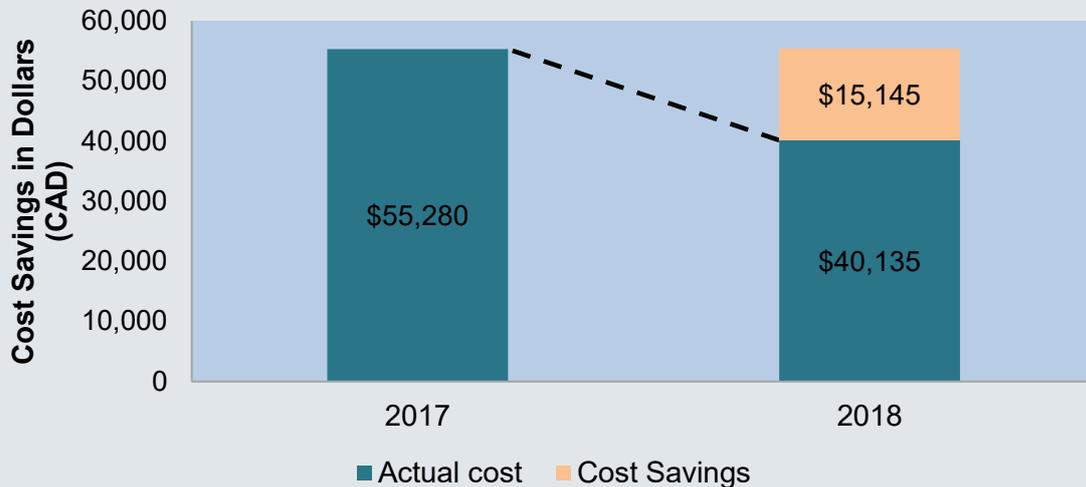
In 2012, the annual direct health-care costs for falls in Canada was estimated to be over CAD 2 billion (PHAC, 2017), with older adults accounting for nearly half of this cost. The average Canadian older adult stays in hospital ten days longer than for any other cause and over one third of older adults are admitted to LTC homes following hospitalization for a fall (PHAC, 2017). The estimated cost of CAD 2 billion reflects the direct and indirect in-patient costs of ten days with nursing care and excludes physician billing. As per 2004 reports by Public Health Agency of Canada, when the resident returns to the LTC home, the estimated cost of fall is CAD 757.26 (as per inflated cost in 2017), per day per person in a LTC home.

The NQUIRE data was analysed from 2017 to 2018 for one large bed size LTC-home using the indicator: falls in the past 30 days. A significant reduction of 10.02 per cent in the average number of falls in the past 30 days was noted from 2017 to 2018. In 2017, the cost of falls for this home was CAD 55,280 (based on the number of average resident falls in the past 30 days and multiplied by the estimated per day per person cost). Due to the reduction in average number of falls this LTC BPSO saved approximately CAD 15,145 in 2018 and the actual cost of falls in the same year was estimated to be CAD 40,135 for this one home.

The positive results of drop in patients falls and related saving, occurred despite the low levels of regulated staff in Ontario's nursing homes. Of the total number of health-care providers in LTC, RNs

account for 9%, RPNs (Registered Practical Nurses) for 17%, and NPs (Nurse Practitioners) for less than 1%. Other regulated professionals include nutritionists, social workers, and physiotherapists, who together account for eight per cent of all health-care providers in LTC. The remaining 65% of care is delivered by unregulated staff such as PSWs (Personal Support Workers).

Figure: Economic impact



Source: Shanoja Naik, Megan Bamford, Doris Grinspun and Stephanie Voong

The Registered Nurses' Association of Ontario (RNAO) Best Practice Guidelines Program is funded by the Ontario Ministry of Health. All work produced by the RNAO is editorially independent from its funding source. The funder was not involved in the design of the study, the data collection and analysis, or the writing of the paper. For details on the RNAO Program: <https://rnao.ca/bpg>

4.2.7. Infections and antimicrobial resistance

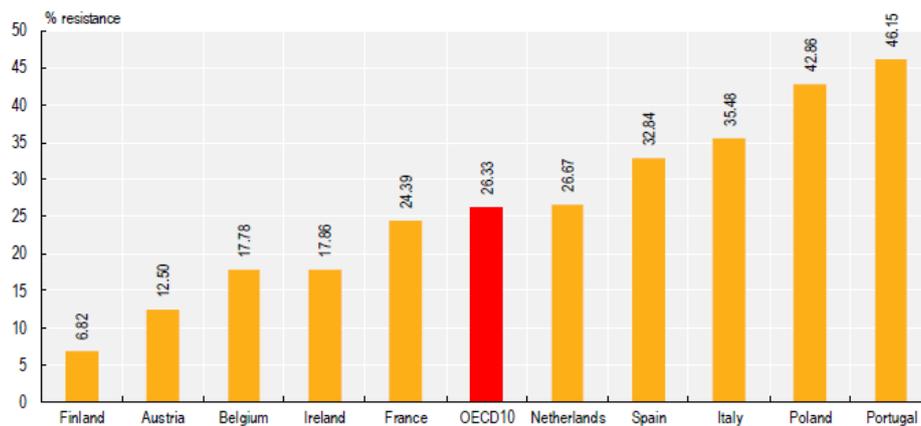
182. Residents in LTC facilities often have compromised immune systems or chronic conditions that place them at heightened risk of infection. Issues of incontinence put residents at risk for UTIs and bed-bound LTC residents are more likely to experience skin infections. Close proximity and constant contact of residents with health care staff and other residents can facilitate the spread of respiratory and other infections throughout LTC populations (Stuart, Lim and Kong, 2014^[189]). As a result, health care-associated infections are common in LTC—averaging 3.85% prevalence among long-term care facility residents in OECD countries in 2016-2017 (OECD, 2019^[2]).

183. To respond to these threats, health care workers have relied on constant and prolonged use of antibiotics for LTC residents (Thornley et al., 2019^[190]). Research in the US finds that over 10% of nursing home residents receive antibiotics at any given time (Pakyz and Dwyer, 2010^[191]). A study of LTC facilities across 24 European countries found a crude prevalence of residents receiving at least one antibiotic was 4.9% (Ricchizzi et al., 2018^[192]). Antibiotics are commonly prescribed in the LTC setting for suspected UTIs, respiratory symptoms, and skin wounds—despite options for effective symptom management through other therapeutic methods (Khandelwal, Lathren and Sloane, 2012^[193]).

184. Residents in LTC typically live in care settings for multiple years, as a result, the impact of overprescribing on antibiotic resistance is amplified over time (Sloane et al., 2016^[194]). Figure 4.4 shows the proportions of antimicrobial resistant bacteria isolated from LTC residents, finding

that on average, over a quarter of isolates were resistant—equivalent to levels seen in acute care hospitals (OECD, 2019^[2]). In addition to antibiotic resistance, use of antibiotics puts LTC residents at higher risk for other adverse events such as *C difficile* diarrhoea, gastroenteritis, allergic reactions to antibiotics, and general medication adverse events. Studies have found that high uses of antibiotics in LTC facilities leads to higher risks of certain antibiotic adverse events (*C difficile*, diarrhoea or gastroenteritis, and exposure antibiotic-resistant bacteria) among all patients, not only antibiotic recipients (Daneman et al., 2015^[195]).

Figure 4.4. Antimicrobial resistance proportion among health care-associated infections in long-term care, 2016-2017



Note: Based on composite antibiotic resistance indicator developed by ECDC. Only countries with over 15 bacterial isolated included.

Source: (OECD, 2019^[2])

185. Efforts to reduce setting-acquired infections are often not expensive in terms of resources, but require significant cultural and organizational changes to implement. A 2018 report from the OECD found that significant investments in policies for reducing AMR would pay for themselves within a year. Improved prescribing education, programs for antibiotic stewardship, and improved hygiene can all reduce the instances and costs of infections in LTC (OECD, 2018^[196]).

4.2.8. Abuse and neglect

186. Individuals residing in LTC facilities or in home health settings are at heightened risk for abuse or neglect. Research on the extent of the problem is limited, but findings from a systematic review of five developed countries note a rate of abuse ranging between 4–6% among older people if physical, psychological and financial abuse, and neglect are all included (Krug et al., 2002^[30]). A more recent review finds even higher rates, suggesting that as many as one in six older adults experience elder abuse globally, amounting to 141 million people (Yon et al., 2017^[197]). Research from the WHO studying elder populations in the European region found that over the course of a year, 2.7% of older people experienced physical abuse, 0.7% sexual abuse, 19.4% mental abuse, and 3.8% financial abuse (Sethi et al., 2011^[198]).

187. LTC recipients are particularly at risk of abuse from their caregivers. Research also suggests that over half of LTC staff working in institutional settings admitted to perpetrating some form elder abuse in the last year, including physical, psychological, sexual, and financial abuse, as well as neglect (Yon et al., 2019^[199]) (WHO, 2018^[200]). A systematic review of over

40 studies suggests that around 10% of caregivers admit to perpetrating physical abuse, while 40% admit to verbal abuse (Cooper, Selwood and Livingston, 2008^[201]).

188. While much research and attention has been given to the resident-caregiver relationship, resident-to-resident abuse is another area of concern, particularly in the LTC setting. A systematic review of 27 studies and 5 grey-literature articles found that that resident-to-resident abuse may account for approximately one-third of all abuse cases, and includes a range of aggressive physical, psychological, verbal, and sexual behaviours (Mcdonald et al., 2019^[202]).

189. Abuse and neglect of individuals in LTC is not only a humanitarian and social justice issue, it also can create an increased burden in terms of premature death and disability and has implications in terms of resources. Hospital admissions and subsequent care following elder abuse can constitute significant costs. Estimates in the US suggest that injuries resulting from elder maltreatment cost over USD 5 billion annually (Sethi et al., 2011^[198]). Elders who have experienced abuse may also require more resources for their treatment than those who have not. Research studying health care utilization of individuals with diagnostic codes consistent with elder mistreatment found that patients who experienced abuse were more likely to use emergency room services, and more likely to experience longer hospitalizations (Rovi et al., 2009^[203]).

190. As with other common adverse events, neglect can be addressed through evidence-proven strategies, such as ensuring that care recipients have access to sufficient time with appropriately qualified staff. Staffing and care standards should be used to ensure a person-centred approach to care, where staff engage in therapeutic relationships that emphasise personhood, autonomy, respect, and dignity (Phelan, 2015^[204]).

4.2.9. Malnutrition

191. Malnutrition is a common occurrence in LTC. For older populations, malnutrition can lead to or worsen a state of frailty and lead more intensive demand for care services caused by increased dependency. Furthermore, malnutrition can contribute to the development of morbidities, lead to worsening of the prognosis for existing morbidities and increase the risk of mortality (Srp, 2007^[205]). Research on nursing home residents in Italy found that over 30% of residents had malnutrition, and an additional 50% where at risk (Pezzana et al., 2015^[206]). In Turkey, over 10% of nursing home residents were found to have malnutrition, and almost 40% were found to be at risk for malnutrition (Cankurtaran et al., 2013^[207]).

192. As malnutrition often leads to increased care needs, calculations of the costs of Malnutrition often focus on the costs of related care, including prevention, diagnostics, therapy, rehabilitation, care of disease. Research from the UK found that malnourished patients use significantly more resources than nonmalnourished individuals. A study of the costs of patient during the 6 months after malnutrition diagnosis was estimated to be over USD 1,000 more than in well-nourished patients, attributable to higher rates of medical consultations, hospital admissions, and in-hospital length of stays (Abizanda et al., 2016^[208]). The direct costs of malnutrition of residents in LTC institutions has been estimated to cost the Irish health system USD 764.95 million annually, or 6% of the health care budget (Abizanda et al., 2016^[208]).

193. As with other adverse events, addressing malnutrition requires that services be focused on quality care, including ensuring that there are resources available for dietary and nutrition support. Malnutrition can also be addressed through interventions related to pharmaceutical review, and harmonized with interventions also recommended for addressing overuse of opioids, antipsychotics, and polypharmacy.

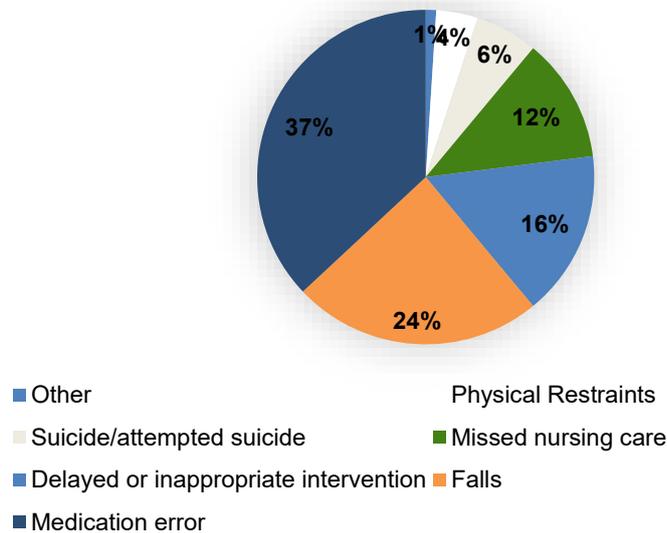
4.2.10. Many of the root causes of adverse events are caused by a few, common underlying issues

194. Little systematic research has been done analysing the root causes of adverse events in the LTC setting. Even so, a number of factors contribute to poor quality care and have been determined as causes for safety events. Research from skilled nursing facilities in the United States found physician review of safety incidents determined that 59 percent of adverse events and temporary harm events were clearly or likely preventable (Levinson, 2014^[209]).

195. While a huge proportion of adverse events in LTC are preventable, policy makers need to better understand why they happen in order to implement systemic change. This requires identifying the root causes underlying these events. Researchers in Sweden identified over 600 possible contributing factors for a set of adverse events in Swedish Nursing homes, finding that four groups contributed to almost 90% of the adverse events (Andersson et al., 2018^[6]). These adverse events included medication error, adverse events following falls, delayed or inappropriate interventions, and missed nursing care (see Figure 4.5). The root causes of these events can typically be attributed to communication failure, inadequate risk assessment, inadequate staffing, and lack of supervision, among other causes.

196. Techniques for addressing these root causes range from simple process changes to comprehensive, cultural changes to LTC delivery. Medication errors, for example, can be addressed through improved medication reconciliation practices, reducing unnecessary polypharmacy, and ensuring appropriately staffed LTC residences. It's to be noted, that the third and fourth cause of adverse events (delayed or inappropriate interventions and missed nursing care) can also be addressed by adding more and better qualified staffing.

Figure 4.5. Groups of adverse events reported (n = 173) to the Health and Social Care Inspectorate (Sweden)



Source: (Andersson et al., 2018^[6])

4.2.11. The disease and cost burden of LTC adverse events ranges across the type of adverse events

Share of Health spending attributable to adverse events

197. Costs of LTC are a rising concern for OECD countries. As of 2018, the costs of institutional long-term care for an older person with severe needs are more than double the median income among people of retirement age and older. However, there are significant opportunities to improve the value of spending by reducing patient safety events. Limited resources for LTC can be maximised by directing funding towards appropriate staffing levels and improving quality of care, rather than responding to safety failures.

198. Resources directed to address harms that have occurred over the course of care are resources that could have been better used for other purposes. Costs related to hospitalisation following adverse events in skilled nurse facilities of Medicare beneficiaries accounted for 2% of all Medicare spending in the United States, many of which were identified as preventable (Levinson, 2014^[209]).

199. Findings from various studies highlighted in Table 4.2 demonstrate the costs to the health system of various specific conditions. Pressure injuries, for example, have been estimated to costs differing OECD countries from between 0.17% and 2.9% of spending on health. Malnutrition in LTC is estimated as accounting for as much as 6% of health spending in Ireland. Annual medical costs of falls have been estimated at over USD 50 billion in the US, inappropriate medication use AUD 38 million in Australia, and abuse as much as USD 5.3 billion in the US. Taken together, **these common adverse events can add up to significant proportions of spending on health**. Spending that is not improving care, but rather, only mitigating harms that caused by the care itself.

Table 4.2. Financial burden due to specific adverse events or conditions (as share of public spending on LTC)

Condition	Study	Country	Description	Share of Spending on Health
Pressure ulcers	(Van Den Bos et al., 2011 ^[129])	United States	The total cost of pressure ulcers were estimates to the USD 3.27 Billion	0.17%
Pressure ulcers	(Severens et al., 2002 ^[123]).	The Netherlands	Estimates that the annual costs of pressure ulcers in the Netherlands ranged between USD 152 million and 807 million	0.5% - 2.7%
Pressure ulcers	(Posnett and Franks, 2008 ^[131])	The United Kingdom	The NHS annual costs of pressure ulcers, including nursing homes, in 2005-2006 was estimated to be between £1.8 and £2.6 billion pounds	2% - 2.9%
Benzodiazepines				
Opioids				
Falls	(CDC, 2016 ^[186]) (The Joint Commission, 2015 ^[187]).	The United States	Estimates in the US have placed annual medical cost of falls at over USD 50 billion	
Inappropriate Medication Use	(Harrison et al., 2018 ^[140])	Australia	Reducing exposure to half of PIMs for LTC residents could result in an annual direct saving in medication costs of approximately AUD 38 million in Australia.	
Abuse	(Jackson, 2009 ^[210])	Australia (Queensland)	The Elder Abuse Prevention Unit estimated the financial exploitation of older people in Queensland for the 2007/2008 fiscal year to be a minimum of AUD 1.8	

			billion and a maximum of AUD 5.8 billion . In addition, costs due to hospital admissions for elder maltreatment for 2007/2008 have been estimated to be 26 between AUD 9.9 million and AUD 30.7 million .	
Abuse	(Sethi et al., 2011 ^[198])	United States	Cost approximations from the United States suggest that the direct health care costs of injuries caused by elder maltreatment are likely to contribute more than USD 5.3 billion to the country's annual health care expenditure	
Malnutrition	(Meijers et al., 2012 ^[211])	The Netherlands	Total extra costs for managing the problem of malnutrition in Dutch nursing homes is 279 million Euro per year, which is 3% of the total costs annually spent by the Dutch nursing home sector	.6%
Malnutrition	(Rice and Normand, 2012 ^[212])	Ireland	Annual public health and social care costs associated with malnourished adult patients were estimated as USD 764.95 million for institutionalized older adults with DRM.	6%

4.2.12. Admissions to hospitals are a key cost driver

200. There are a number of cost drivers in the case of adverse events in LTC. Perhaps the most significant are costs associated with hospital admissions. A hospital admission may follow any number of safety incidents, for example nursing home acquired pneumonia, a fall, or an adverse drug event. Other safety events are less costly, but may have an equivalent, or greater, impact on quality of life.

201. For example, pressure injuries require additional staff time for treatment, but the costs of treatment are generally not significant as compared to a hospitalisation. However, pressure injuries can affect patient's lives emotionally, mentally, physically and socially. Ultimately, pressure injuries, if untreated in-time, can result in resident's death. Similarly, the costs of treatment for AMR infections is not high per-se, in comparison to a surgery or an extended hospital stay, but it may have significant effects in regard to morbidity and mortality, as well as having significant consequences in terms of further exacerbation of the AMR crisis.

4.2.13. Estimates of the costs of adverse events in LTC are more than USD 18 billion across OECD countries

202. There is limited research on the costs of adverse events in LTC, but it is possible to approximate the impacts. As of 2017, there were over 230 million people over age 65 living in the OECD (OECD, 2019^[213]). Of these, **over 25 million people are recipients of LTC services**.

203. Research has shown that over 25% of individuals receiving LTC are hospitalized annually (Tanuseputro et al., 2015^[214]). As discussed in previous sections, a significant number of admissions from LTC are preventable. Research from Switzerland found that **42% of admissions to hospitals from LTC could have been addressed in ambulatory care settings** (Muench et al., 2019^[215]).

204. Using an OECD average cost of a hospital admission of USD 6,422, total cost of avoidable admissions to hospitals from LTC facilities in 2016 was almost **USD 18 billion⁴**, according to an analysis using data from 25 OECD countries. **This figure is equivalent to 2.5% of all spending on hospital inpatient care or 4.4% of all spending on LTC**. This finding is in line with research from the US that finds that admissions from skilled nursing facilities account for 2% of all Medicare spending (Levinson, 2014^[209]). The estimated USD 18 billion that is spent annually on avoidable hospital admissions from LTC, is funding that could be better

⁴ 17,740.5 US Dollar, Millions, Current prices, current PPPs

spent on appropriate staffing, quality improvement initiatives, appropriate primary/ambulatory care and efforts that would improve the quality of life for individuals residing in LTC. In addition to the costs, it is important to remember that an admission is a **traumatic, disorienting, and uncomfortable experience for older persons**. Unnecessary admissions, and transitions between hospital and LTC (and the reverse), enhance exposure to additional adverse events, reduce quality of life, and make already frail people even more vulnerable.

205. As discussed in Section 1.1.1, the populations of OECD countries are continuing to age. By 2030, OECD countries will add an additional 54 million people to the over 65 population. If nothing changes, and taking into account population and demographic changes, the cost of avoidable admissions from LTC is set to rise to almost **USD 22 billion⁵ by 2030—an almost 20% increase over the next 15 years**.

4.2.14. Financing for prevention in LTC

206. When governments spend money on avoidable admissions, that money cannot be directed towards prevention. Spending on avoidable hospital admissions from LTC facilities alone is equivalent to **almost 10%** of all spending on prevention across all health care settings, including hospitals, LTC facilities, ambulatory and ancillary health care providers and general preventative care services in OECD countries⁶. Current spending on preventative services in LTC is negligible. **Only 10 countries** (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Netherlands, Poland, Portugal, Germany and Slovenia) **have reported data on preventative spending in LTC to the OECD between 2010 and 2017**, and for 2017, only seven countries reported any spending at all, with an average spend of just 0.67 Million US dollars for each of these seven countries (OECD.Stat, 2019_[216]).

4.2.15. Using policy levers to help lift the economic burden of adverse events in LTC

207. The costs of safety failures in LTC impose significant costs to the LTC and health care systems. The human and financial costs of these failures can be mitigated as a significant proportion of safety events in the LTC environment are found to be preventable. Addressing the root causes of safety failures of LTC is an urgent policy priority for countries.

208. The significant amount of funding that goes towards treating avoidable admissions confirms the **need to raise awareness of nursing home safety and seek to reduce patient harm through promotion of patient safety in hospitals**. But admissions are just one consequence of poor quality care. Adverse events such as pressure ulcers, infections and AMR, abuse and neglect, and malnutrition may not result in a hospital stay, but still incur costs to the system in terms of medication costs or additional costs of care.

209. To address the economic burden of safety lapses in LTC, policy makers need to make targeted investments that deal with the root causes of these safety risks, by investing in policies that will increase staffing, communication, quality improvement, and better coordination with the acute care sector. Current spending on LTC preventive services is rarely reported, and when it is, is negligible in terms of total spending on health care and long-term care services. Improvements to LTC practices and efforts to address LTC workforce compositions can also drive down the frequency of LTC adverse events. **Targeted investments** in best practices to

⁵ 21,836.1 US Dollar, Millions, Current prices, current PPPs

⁶ Total spending across OECD economies in 2016 on prevention was 191,844.3 US Dollar, Millions, Current prices, current PPPs

reduce common adverse events and safety risks, such as improved **staff education, hygiene, and medication review**, are also needed.

210. It is understood that **hospital admissions are not always avoidable**, but many could be addressed in ambulatory care, without exposing LTC recipients to potential for additional adverse events that may occur over the course of transfers and hospitalizations. When a hospitalization is required, extra care must be provide to ensure that safeguards are in place to address LTC resident's fragility and cognitive ability. Getting the patient back to the LTC setting, their home—so to speak, as quickly as possible, should be a high priority for care providers.

5

The way forward for improving patient safety in long-term care: conclusion and recommendations

211. Safety in nursing homes has had less attention than hospitals but as demand for aged care rises and the hospital sector relies more and more on care in the community, the structures, processes and incentives for safety in nursing homes will gain greater policy importance. **Today, there are plenty of warning signs of challenges ahead for the LTC sector.**

212. To date, there has been less examination of the economic costs of LTC safety compared other aspects of health care, but there are clear signs that the cost is significant for the broader health sector, including the cost impact on preventable transfers, and acute hospital admissions and rehabilitation services before returning back to their homes. While nursing homes are unique, in that they are people's home, not mere clinical settings, similar fundamentals as identified for acute care need to be in place (see Figure 5.1). At the heart of this is the capacity of the workforce. **While leadership and culture can be fostered, without sufficient capacity in both volume and level of competences of nursing home staff, the ability to improve safe practices will be limited.**

Figure 5.1. Key elements for improving safety in primary and ambulatory care at national level



Source: (Auraaen, Slawomirski and Klazinga, 2018^[40])

213. In 2017, the OECD showed that 15% of hospital expenditure and activity in OECD countries can be attributed to treating safety failures (Slawomirski, Auraaen and Klazinga, 2017^[36]). In 2018, a following OECD report found that the direct costs of harm in primary and ambulatory care were around 2.5% of total health expenditure (Auraaen, Slawomirski and Klazinga, 2018^[40]). This report now finds that 2.5% of all spending on hospital inpatient care is spent on avoidable admissions from LTC settings.

214. From these findings, it is clear that **safety is an issue that knows no boundary in terms of setting**. Taken together, safety lapses in these three settings contribute to a considerable economic burden. Moreover, they cannot be addressed in isolation. The movement of patients between primary, LTC, and acute care means that safety lapses in one sector have the potential to “infect” other settings.

5.1. Recommendations for addressing the costs of adverse events in LTC

215. Based on the findings of this report, policy makers should pursue recommendations in the below key areas:

Establishing and enforcing standards for quality of care

216. Governments have a key role to play in ensuring that the systems in place do not harm the residents of LTC facilities. Safety standards should be developed and enforced to ensure that minimum standards are met with regard to employment (staff ratios and qualifications), infrastructure, living environment and quality outcomes. Moreover, these standards must be properly measured and enforced. There are numerous innovative models, from legislation on

staffing ratios to advanced accreditation standards that may be effective for improving the quality and safety of care provided. Also, the potential for using LTC facilities as learning communities are large but need leadership and facilitating. Moreover, policies that encourage the accountability of care of patients/residents across the LTC and acute care settings are well positioned to enhance the safety and quality of delivered care.

Funding prevention over response

217. Financing trends show that spending in LTC is increasing, with significant amounts of funding coming from both the public and private sectors. However, despite the urgency of controlling costs of LTC, there has been relatively little experimentation regarding governance of LTC or the implementation of incentives to encourage coordinated care. More could be done to **implement policies that prioritize safety mechanisms based on learning and risk assessment, expanding upon control based on error**. Nursing homes have as much, or more, to learn from examples of success than they do from identifying, and responding to failures on a case-by-case basis.

Regulation of staffing levels and competencies

218. While the health profile and dependency of residents has been changing, the workforce mix and level has remained relatively unregulated and static. There is now a gap between capacity and demand. The population of nursing homes has been notably dynamic in recent decades, which has created risk exposure for persons who live in LTC facilities without appropriately matched staff. National standards for safety in nursing homes and minimal staffing levels for registered nurses are examples of policies that countries have taken to address workforce competency, and to reduce the occurrence of safety incidents. **Policy efforts must be designed in order ensure that there are appropriate staffing levels for the management of medical complex nursing home residents.**

Transitioning LTC into a learning system, with a focus on safety culture

219. Staff of all levels should feel empowered to document safety issues, suggest process improvements, and feel responsibility for facility outcomes. Creating a good work environment for health care employees and improving people's quality and safety of care are mutually reinforcing efforts. Studies from other sectors suggest that a culture of safety may enhance productivity. In health care, an economic case can similarly be made for patient safety culture as a way to achieve the long-term advantages of operational sustainability and quality of outcomes. **Fostering a culture of patient safety is intimately linked to the healthy work environments that enable staff to consistently deliver high-quality and safe care services.**

Realizing an inclusive approach towards safety

220. Culture and learning systems can only be effective when they are set up in an inclusive way. Hence, **the involvement of nursing home residents and their family in the efforts to mitigate risks is essential**. To achieve the right balance between risk-control and a personalized environment for residents, a continuous dialogue about safety approaches is key. These forms of involvement should not only exist on a policy and managerial level, through for example client and relative councils of nursing homes, but also be an integral part of day to day adjustments in care plans for residents.

Addressing the root causes of safety lapses

221. To address the economic burden of safety lapses in LTC, policy makers need to make targeted investments that deal with the root causes of these safety risks, by investing in policies that will **increase staffing, communication, quality improvement, and better coordination with the acute care sector**. Targeted investments in best practices to reduce common adverse events and safety risks, such as improved staff education, hygiene, and medication review, are also needed.

5.2. Conclusion

222. As the demand on this sector grows, and the nature of the care shifts, so must the regulation, funding and workforce that support people receiving long-term care. The ever increasingly important links to acute care cannot be ignored and governance reform is required in some countries to ensure sufficient resources and effective planning of care across the transitions of acute and long-term care, including incentives for quality care given the up and down stream implications of unsafe care for both sectors.

223. The foundation of LTC delivery is safety. LTC institutions should be a safe environment for living, working, and visiting. A lack of safety, from each of these perspectives, limits the ability of the system to provide quality care and promote meaningful social engagement. **Committing to safety, and improving on the status-quo, can produce an economic and human dividend for LTC**. Hence, valuing safety for the long haul.

References

- (n.a.) (n.d.), *Efficiency of Care Between Nursing Homes and Hospitals*, [225]
<https://www.medscape.com/viewarticle/503748> (accessed on 4 November 2019).
- Abizanda, P. et al. (2016), “Costs of Malnutrition in Institutionalized and Community-Dwelling [206]
 Older Adults: A Systematic Review”, <http://dx.doi.org/10.1016/j.jamda.2015.07.005>.
- Alberta Health Services (n.d.), *AUA Toolkit*, [145]
<https://www.albertahealthservices.ca/scns/auatoolkit.aspx> (accessed on 5 December 2019).
- Alberta Health Services (n.d.), *Stories & Articles Archive*, [146]
<https://www.albertahealthservices.ca/scns/Page13075.aspx> (accessed on 5 December 2019).
- ANAES (2000), *LIMITING THE RISKS OF PHYSICAL RESTRAINT OF ELDERLY SUBJECTS*. [181]
- Andersson, Å. et al. (2018), “Factors contributing to serious adverse events in nursing homes”, [4]
Journal of Clinical Nursing, Vol. 27/1-2, pp. e354-e362, <http://dx.doi.org/10.1111/jocn.13914>.
- Andrew, M. et al. (2018), “Polypharmacy and use of potentially inappropriate medications in [141]
 long-term care facilities: does coordinated primary care make a difference?”, *International
 Journal of Pharmacy Practice*, Vol. 26/4, pp. 318-324, <http://dx.doi.org/10.1111/ijpp.12397>.
- ASPE (2015), *Long-Term Services and Supports for Older Americans: Risks and Financing [18]
 Research Brief | ASPE*, [https://aspe.hhs.gov/basic-report/long-term-services-and-supports-
 older-americans-risks-and-financing-research-brief](https://aspe.hhs.gov/basic-report/long-term-services-and-supports-older-americans-risks-and-financing-research-brief) (accessed on 9 August 2019).
- Atwell, R. (2011), “Implementing transformational leadership in long-term care”, [91]
Geriatric nursing, Vol. 32/3, pp. 212-219.
- Auraaen, A., L. Slawomirski and N. Klazinga (2018), *The Economics of Patient Safety in Primary [39]
 and Ambulatory Care: Flying Blind*, OECD, [https://www.oecd.org/health/health-systems/The-
 Economics-of-Patient-Safety-in-Primary-and-Ambulatory-Care-April2018.pdf](https://www.oecd.org/health/health-systems/The-Economics-of-Patient-Safety-in-Primary-and-Ambulatory-Care-April2018.pdf) (accessed on
 28 June 2019).
- Australian Royal Commission (2019), *MEDIUM-AND LONG-TERM PRESSURES ON THE [15]
 SYSTEM: THE CHANGING DEMOGRAPHICS AND DYNAMICS OF AGED CARE*,
<http://www.dpmc.gov.au/government/commonwealth-coat-arms> (accessed on
 18 October 2019).
- Bercaw, S. et al. (2016), “Initiative To Reduce Avoidable Hospitalizations Among Nursing Facility [63]
 Residents Shows Promising Results”, <http://dx.doi.org/10.1377/hlthaff.2016.1310>.

- Bernstein, N. (2012), *Long-Term Care Looms as Rising Medicaid Cost - The New York Times*, [51]
<https://www.nytimes.com/2012/09/07/health/policy/long-term-care-looms-as-rising-medicaid-cost.html> (accessed on 6 October 2019).
- Blais, R. et al. (2013), "Assessing adverse events among home care clients in three Canadian provinces using chart review.", *BMJ quality & safety*, Vol. 22/12, pp. 989-97, [81]
<http://dx.doi.org/10.1136/bmjqs-2013-002039>.
- Boisaubin, E., A. Chu and J. Catalano (2007), "Perceptions of Long-Term Care, Autonomy, and Dignity, by Residents, Family and Care-Givers: The Houston Experience", *Journal of Medicine and Philosophy*, Vol. 32/5, pp. 447-464, [7]
<http://dx.doi.org/10.1080/03605310701626414>.
- Boles, M., B. Pelletier and W. Lynch (2004), "The Relationship Between Health Risks and Work Productivity", *J Occup Environ Med*, Vol. 46/7, p. 737, [231]
<http://dx.doi.org/10.1097/01.jom.0000131830.45744.97>.
- Boscart, V. et al. (2018), "The associations between staffing hours and quality of care indicators in long-term care", *BMC Health Services Research*, Vol. 18/1, p. 750, [54]
<http://dx.doi.org/10.1186/s12913-018-3552-5>.
- Bouvy, J., M. Bruin and M. Koopmanschap (2015), "Epidemiology of Adverse Drug Reactions in Europe: A Review of Recent Observational Studies", *Drug Safety*, Vol. 38/5, p. 437, [163]
<http://dx.doi.org/10.1007/S40264-015-0281-0>.
- Boyle, G. (2008), "Autonomy in long-term care: a need, a right or a luxury?", [13]
<http://dx.doi.org/10.1080/09687590802038795>.
- Boyle, G. (2005), "The role of autonomy in explaining mental ill-health and depression among older people in long-term care settings", *Ageing and Society*, Vol. 25/5, pp. 731-748, [111]
<http://dx.doi.org/10.1017/S0144686X05003703>.
- Brasure, M. et al. (2016), *Comparative Effectiveness Review Number 177 Nonpharmacologic Interventions for Agitation and Aggression in Dementia*, <http://www.ahrq.gov> (accessed on 1 August 2019). [132]
- Brauner, D. et al. (2018), "Aging & Health: Does nursing home compare reflect patient safety in nursing homes?", *Health Affairs*, Vol. 37/11, pp. 1770-1778, [109]
<http://dx.doi.org/10.1377/hlthaff.2018.0721>.
- Bravo, G. et al. (2014), "Does regulating private long-term care facilities lead to better care? A study from Quebec, Canada", *International Journal for Quality in Health Care*, Vol. 26/3, pp. 330-336, [221]
<http://dx.doi.org/10.1093/intqhc/mzu032>.
- Briesacher, B. et al. (2013), "Antipsychotic use among nursing home residents.", *JAMA*, Vol. 309/5, pp. 440-2, [135]
<http://dx.doi.org/10.1001/jama.2012.211266>.
- Brown, J. and A. Finkelstein (2011), "Insuring Long-Term Care in the United States", [22]
<http://dx.doi.org/10.1257/jep.25.4.119>.
- Bruyère Research Institute (2019), *Deprescribing.org - Optimizing Medication Use*, [170]
<https://deprescribing.org/> (accessed on 5 April 2019).

- Burke, R. and R. Werner (2019), *Quality measurement and nursing homes: Measuring what matters*, BMJ Publishing Group, <http://dx.doi.org/10.1136/bmjqs-2019-009447>. [110]
- Cadogan, C. et al. (2015), "Improving appropriate polypharmacy for older people in primary care: selecting components of an evidence-based intervention to target prescribing and dispensing", *Implementation Science : IS*, Vol. 10, p. 161, <http://dx.doi.org/10.1186/S13012-015-0349-3>. [155]
- Cadogan, C. et al. (2015), "Improving appropriate polypharmacy for older people in primary care: selecting components of an evidence-based intervention to target prescribing and dispensing", *Implementation Science : IS*, Vol. 10, p. 161, <http://dx.doi.org/10.1186/S13012-015-0349-3>. [166]
- Canadian Deprescribing Network (2019), *Do I still need this medication? Is deprescribing for you?*, <https://www.deprescribingnetwork.ca/> (accessed on 5 April 2019). [171]
- Cankurtaran, M. et al. (2013), "Turkish nursing homes and care homes nutritional status assessment project (THN-malnutrition)", *European Geriatric Medicine*, Vol. 4/5, pp. 329-334, <http://dx.doi.org/10.1016/j.eurger.2013.02.003>. [205]
- Castle, N. and K. Sonon (2006), "A culture of patient safety in nursing homes.", *Quality & safety in health care*, Vol. 15/6, pp. 405-8, <http://dx.doi.org/10.1136/qshc.2006.018424>. [112]
- CDC (2016), *Costs of Falls Among Older Adults | Home and Recreational Safety | CDC Injury Center*, CDC, <https://www.cdc.gov/homeandrecreationalafety/falls/fallcost.html> (accessed on 7 August 2019). [184]
- Chevreur, K. et al. (2004), *The development of hospital care at home: an investigation of Australian, British and Canadian experiences*, <http://www.irdes.fr> (accessed on 1 August 2019). [78]
- Choosing Wisely (2013), *Treating disruptive behavior in people with dementia | Choosing Wisely*, <https://www.choosingwisely.org/patient-resources/antipsychotic-drugs-for-people-with-dementia/> (accessed on 7 August 2019). [134]
- Choosing Wisely Canada (2019), *A Toolkit for Reducing Inappropriate Use of Antipsychotics in Long Term Care*. [148]
- Chu, C. et al. (2015), "Understandings of Leadership and Competency in Long-term Care: A Comparison of Frontline Nurses and Corporate Leaders Perspectives on Nursing Leadership and Competency", *Journal of the American Medical Directors Association*, Vol. 16/3, p. B30, <http://dx.doi.org/10.1016/j.jamda.2015.01.069>. [73]
- CIHI (2016), *Use of Antipsychotics Among Seniors Living in Long-Term Care Facilities, 2014 Report*. [144]
- CIHI (2014), *Use of Antipsychotics Among Seniors Living in Long-Term Care Facilities, 2014 Report Our vision Our mandate*. [226]
- CMS (2019), *Quality Measures | CMS*, <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/NHQIQualityMeasures> (accessed on 19 November 2019). [61]

- Codde, J. et al. (2010), "Quantification of the proportion of transfers from residential aged care facilities to the emergency department that could be avoided through improved primary care services.", *Australasian journal on ageing*, Vol. 29/4, pp. 167-71, <http://dx.doi.org/10.1111/j.1741-6612.2010.00496.x>. [26]
- Collopy, B. (1995), *Power, paternalism and the ambiguities of autonomy In Enhancing autonomy in long-term care, concepts and strategies*, ed.. [10]
- Colombo, F. et al. (2011), *Help Wanted?: Providing and Paying for Long-Term Care*, OECD Health Policy Studies, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264097759-en>. [49]
- Committee on the Future Health Care Workforce for Older Americans; Board on Health Care Services ; Institute of Medicine (2008), *Retooling for an Aging America: Building the Health Care Workforce*, <http://dx.doi.org/10.1097/00006205-200612000-00002>. [216]
- Cooper, C., A. Selwood and G. Livingston (2008), "The prevalence of elder abuse and neglect: a systematic review", *Age and Ageing*, Vol. 37/2, pp. 151-160, <http://dx.doi.org/10.1093/ageing/afm194>. [199]
- Costa-Font, J. and C. Courbage (2015), "Crowding Out of Long-Term Care Insurance: Evidence from European Expectations Data", *Health Economics*, Vol. 24, pp. 74-88, <http://dx.doi.org/10.1002/hec.3148>. [45]
- Costa-Font, J., J. Fernandez and K. Swartz (2015), "Transitioning Between 'The Old' and 'The New' Long-Term Care Systems", *Health Economics*, Vol. 24, pp. 1-3, <http://dx.doi.org/10.1002/hec.3156>. [24]
- Dana, B. and D. Olson (2007), *Effective Leadership in Long Term Care: The Need and the Opportunity*, https://achca.memberclicks.net/assets/docs/ACHCA_Leadership_Need_and_Opportunity_Paper_Dana-Olson.pdf (accessed on 8 August 2019). [71]
- Daneman, N. et al. (2015), "Variability in Antibiotic Use Across Nursing Homes and the Risk of Antibiotic-Related Adverse Outcomes for Individual Residents", *JAMA Internal Medicine*, Vol. 175/8, p. 1331, <http://dx.doi.org/10.1001/jamainternmed.2015.2770>. [193]
- Datta, R. et al. (2018), "Serious adverse events of older adults in nursing home and community intervention trials", *Contemporary Clinical Trials Communications*, Vol. 9, pp. 77-80, <http://dx.doi.org/10.1016/j.conctc.2017.12.004>. [107]
- Davies, E. and M. O'Mahony (2015), "Adverse drug reactions in special populations - The elderly", *British Journal of Clinical Pharmacology*, Vol. 80/4, pp. 796-807, <http://dx.doi.org/10.1111/bcp.12596>. [115]
- De La, C., M. Joaquim and O. Martins (2013), *Public spending on health and long-term care: a new set of projections*. [220]
- De Meijer, C. et al. (2009), "The role of disability in explaining long-term care utilization", *Medical Care*, Vol. 47/11, pp. 1156-1163, <http://dx.doi.org/10.1097/MLR.0b013e3181b69fa8>. [33]
- Demarré, L. et al. (2015), "The cost of pressure ulcer prevention and treatment in hospitals and nursing homes in Flanders: A cost-of-illness study.", *International journal of nursing studies*, Vol. 52/7, pp. 1166-79, <http://dx.doi.org/10.1016/j.ijnurstu.2015.03.005>. [122]

- Dubois, D. et al. (2018), "Changes in Prescribing Symptomatic and Preventive Medications in the Last Year of Life in Older Nursing Home Residents", <http://dx.doi.org/10.3389/fphar.2017.00990>. [157]
- Dwyer, R. et al. (2014), "A systematic review of outcomes following emergency transfer to hospital for residents of aged care facilities.", *Age and ageing*, Vol. 43/6, pp. 759-66, <http://dx.doi.org/10.1093/ageing/afu117>. [25]
- Einav, L., A. Finkelstein and N. Mahoney (2018), *Long-Term Care Hospitals: A Case Study in Waste*, National Bureau of Economic Research, Cambridge, MA, <http://dx.doi.org/10.3386/w24946>. [36]
- Eisenberg, J., C. Bowman and N. Foster (2001), "Does a Healthy Health Care Workplace Produce Higher-Quality Care?", *The Joint Commission Journal on Quality Improvement*, Vol. 27/9, pp. 444-457, [http://dx.doi.org/10.1016/S1070-3241\(01\)27039-4](http://dx.doi.org/10.1016/S1070-3241(01)27039-4). [227]
- Eliopoulos, C. (2011), *Instilling a Culture of Safety in Long-Term Care Settings | Population Health Learning Network*, <https://www.managedhealthcareconnect.com/article/instilling-culture-safety-long-term-care-settings> (accessed on 1 August 2019). [87]
- Ellenbecker, C. et al. (2008), *Patient Safety and Quality in Home Health Care*, Agency for Healthcare Research and Quality (US), <http://www.ncbi.nlm.nih.gov/pubmed/21328733> (accessed on 8 August 2019). [76]
- European Commission (2015), "Technology-enabled Services for Older People Living at Home Independently: 2015 Report EUR 27256 EN", <http://dx.doi.org/10.2791/559325>. [68]
- European Union (2019), *SIMPATY project*, <http://www.simpaty.eu/> (accessed on 5 April 2019). [172]
- Fabius, R. et al. (2013), "The Link Between Workforce Health and Safety and the Health of the Bottom Line. Tracking Market Performance of Companies That Nurture a 'Culture of Health'", *Journal of Occupational and Environmental Safety*, Vol. 55/9, <http://dx.doi.org/10.1097/JOM.0b013e3182a6bb75>. [229]
- Fasanya, B. and E. Dada (2016), "Workplace Violence and Safety Issues in Long-Term Medical Care Facilities: Nurses' Perspectives.", *Safety and health at work*, Vol. 7/2, pp. 97-101, <http://dx.doi.org/10.1016/j.shaw.2015.11.002>. [84]
- Fine, P. et al. (2019), "Impact of opioid-induced constipation on healthcare resource utilization and costs for cancer pain patients receiving continuous opioid therapy.", *Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer*, Vol. 27/2, pp. 687-696, <http://dx.doi.org/10.1007/s00520-018-4366-z>. [153]
- Fjordside, S. and A. Morville (2016), "Factors influencing older people's experiences of participation in autonomous decisions concerning their daily care in their own homes: a review of the literature", *International Journal of Older People Nursing*, Vol. 11/4, pp. 284-297, <http://dx.doi.org/10.1111/opn.12116>. [6]
- Frogner, B. and J. Spetz (2015), "Entry and Exit of Workers in Long-Term Care", *Health Workforce Research Center on Long-Term Care Frogner*. [217]

- Garcia, R. and S. Joseph (2006), *Five ways you can reduce inappropriate prescribing in the elderly: A systematic review*, https://mdedge-files-live.s3.us-east-2.amazonaws.com/files/s3fs-public/Document/September-2017/5504JFP_AppliedEvidence2.pdf (accessed on 25 March 2019). [165]
- Gartshore, E., J. Waring and S. Timmons (2017), "Patient safety culture in care homes for older people: a scoping review", *BMC Health Services Research*, Vol. 17/1, p. 752, <http://dx.doi.org/10.1186/s12913-017-2713-2>. [93]
- Gerritsen, D. et al. (2007), "Measurement of overall quality of life in nursing homes through self-report: the role of cognitive impairment", *Quality of Life Research*, Vol. 16/6, pp. 1029-1037, <http://dx.doi.org/10.1007/s11136-007-9203-7>. [37]
- Gershon, R. et al. (2007), *Organizational Climate and Nurse Health Outcomes in the United States: A Systematic Review*, https://www.jstage.jst.go.jp/article/indhealth/45/5/45_5_622/_pdf (accessed on 29 July 2019). [99]
- Gilless, E. (2019), *Public Inquiry into the Safety and Security of Residents in the Long-Term Care Home*. [16]
- Gimeno, D. et al. (2005), "Organisational and occupational risk factors associated with work related injuries among public hospital employees in Costa Rica", *Occupational and Environmental Medicine*, Vol. 62, pp. 337-43, <http://dx.doi.org/10.1136/oem.2004.014936>. [95]
- Gori, C. and J. Fernandez (2016), *Long-term care reforms in OECD countries*, <https://books.google.fr/books?id=wE3RDAAAQBAJ&pg=PA173&lpg=PA173&dq=public+LTC+providers&source=bl&ots=foH0mUTOOE&sig=ACfU3U2RS3MSTMUZPRBIJvcGG2vOgBg5TA&hl=en&sa=X&ved=2ahUKEwjFzIfnurfiAhUP1hoKHxzODjoQ6AEwD3oECAUQAQ#v=onepage&q&f=false> (accessed on 25 October 2019). [2]
- Grinspun, D. and I. Bajnok (2018), *Transforming nursing through knowledge: best practices for guideline development, implementation science & evaluation*, Sigma Theta Tau International, <https://books.google.co.uk/books?id=IRRWDwAAQBAJ&pg=PA461&lpg=PA461&dq=pdf+%22Understanding+attitudes+and+their+effects+on+nursing+practice%22+price&source=bl&ots=ArNRlgsFYw&sig=PjHJ3E9KVuVss2JvsOg5Skmxhlo&hl=en&sa=X&ved=2ahUKEwjg3M3gheXdAhWLIIsAKHXchAQcQ6> (accessed on 30 January 2020). [65]
- Growdon, M., R. Shorr and S. Inouye (2017), "The Tension Between Promoting Mobility and Preventing Falls in the Hospital.", *JAMA internal medicine*, Vol. 177/6, pp. 759-760, <http://dx.doi.org/10.1001/jamainternmed.2017.0840>. [178]
- Guest, J. et al. (2017), "Health economic burden that different wound types impose on the UK's National Health Service.", *International wound journal*, Vol. 14/2, pp. 322-330, <http://dx.doi.org/10.1111/iwj.12603>. [128]
- Hajek, A. et al. (2018), "Correlates of preferences for autonomy in long-term care: results of a population-based survey among older individuals in Germany.", *Patient preference and adherence*, Vol. 12, pp. 71-78, <http://dx.doi.org/10.2147/PPA.S146883>. [179]
- Halbesleben, J. et al. (2008), "Nurse Burnout and Patient Safety Outcomes Nurse Safety Perception Versus Reporting Behavior", *Western Journal of Nursing Research*, Vol. 30, pp. 560-577, <http://dx.doi.org/10.1177/0193945907311322>. [100]

- Hall, L. et al. (2016), "Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review Eligibility Criteria for Selecting Studies", *PLoS ONE*, Vol. 11/7, [101]
<http://dx.doi.org/10.1371/journal.pone.0159015>.
- Ham, C. et al. (2010), *GP Budget Holding: Lessons from Across the Pond and from the NHS*, [64]
<http://www.hsmc.bham.ac.uk> (accessed on 6 November 2019).
- Harrington, C. et al. (2012), "Nursing Home Staffing Standards and Staffing Levels in Six Countries", *Journal of Nursing Scholarship*, Vol. 44/1, pp. 88-98, [55]
<http://dx.doi.org/10.1111/j.1547-5069.2011.01430.x>.
- Harrison, S. et al. (2018), "Costs of potentially inappropriate medication use in residential aged care facilities", *BMC Geriatrics*, Vol. 18/1, p. 9, [138]
<http://dx.doi.org/10.1186/s12877-018-0704-8>.
- Havig, A. et al. (2011), "Leadership, staffing and quality of care in nursing homes.", *BMC health services research*, Vol. 11, p. 327, [72]
<http://dx.doi.org/10.1186/1472-6963-11-327>.
- Helvik, A. et al. (2017), "Persistent use of psychotropic drugs in nursing home residents in Norway", *BMC Geriatrics*, Vol. 17/1, p. 52, [137]
<http://dx.doi.org/10.1186/s12877-017-0440-5>.
- Hofmann, H. et al. (2015), "Use of physical restraints in nursing homes: a multicentre cross-sectional study.", *BMC geriatrics*, Vol. 15, p. 129, [180]
<http://dx.doi.org/10.1186/s12877-015-0125-X>.
- Honinx, E. et al. (2019), "Dying in long-term care facilities in Europe: the PACE epidemiological study of deceased residents in six countries", *BMC Public Health*, Vol. 19/1, [9]
<http://dx.doi.org/10.1186/s12889-019-7532-4>.
- Honinx, E. et al. (2019), "Dying in long-term care facilities in Europe: the PACE epidemiological study of deceased residents in six countries", *BMC Public Health*, Vol. 19/1, [75]
<http://dx.doi.org/10.1186/s12889-019-7532-4>.
- Hooper, J. and W. Charney (2005), "Creation of a Safety Culture: Reducing Workplace Injuries in a Rural Hospital Setting", *AAOHN Journal*, Vol. 53/9, pp. 394-398, [98]
<http://dx.doi.org/10.1177/216507990505300905>.
- Horn, S. (2008), "The business case for nursing in long-term care.", *Policy, politics & nursing practice*, Vol. 9/2, pp. 88-93, [125]
<http://dx.doi.org/10.1177/1527154408320420>.
- Hunt, S. et al. (2012), "Registered nurse retention strategies in nursing homes", *Health Care Management Review*, [90]
<http://dx.doi.org/10.1097/HMR.0b013e3182352425>.
- Hwang, H., S. Kim and K. Lee (2015), "Potentially Inappropriate Medications in the Elderly in Korean Long-Term Care Facilities", *Drugs - Real World Outcomes*, Vol. 2/4, pp. 355-361, [140]
<http://dx.doi.org/10.1007/s40801-015-0046-1>.
- Ie, K. et al. (2017), "Physician Factors Associated with Polypharmacy and Potentially Inappropriate Medication Use", *The Journal of the American Board of Family Medicine*, [159]
<http://dx.doi.org/10.3122/jabfm.2017.04.170121>.
- Inaba, M. (2016), "Aging and Elder Care in Japan: A Call for Empowerment-Oriented Community Development", *Journal of Gerontological Social Work*, Vol. 59/7-8, pp. 587-603, [215]
<http://dx.doi.org/10.1080/01634372.2016.1258023>.

- Jackson, L. (2009), *THE COST OF ELDER ABUSE IN QUEENSLAND: WHO PAYS AND HOW MUCH The EAPU*, <http://www.eapu.com.au> (accessed on 22 October 2019). [208]
- Janus, S. et al. (2016), "Psychotropic drug prescriptions in Western European nursing homes", *International Psychogeriatrics*, Vol. 28/11, pp. 1775-1790, <http://dx.doi.org/10.1017/S1041610216001150>. [136]
- Kapoor, A. et al. (2019), "Adverse Events in Long-term Care Residents Transitioning From Hospital Back to Nursing Home", *JAMA Internal Medicine*, Vol. 179/9, p. 1254, <http://dx.doi.org/10.1001/jamainternmed.2019.2005>. [27]
- Kehyayan, V. et al. (2015), "Residents' Self-Reported Quality of Life in Long-Term Care Facilities in Canada", *Canadian Journal on Aging / La Revue canadienne du vieillissement*, Vol. 34/2, pp. 149-164, <http://dx.doi.org/10.1017/S0714980814000579>. [38]
- Khandelwal, C., C. Lathren and P. Sloane (2012), "Ten Clinical Situations in Long-Term Care for Which Antibiotics are Often Prescribed but Rarely Necessary | Population Health Learning Network", *ALTC*, Vol. 20/4, <https://www.managedhealthcareconnect.com/articles/ten-clinical-situations-long-term-care-which-antibiotics-are-often-prescribed-rarely> (accessed on 9 August 2019). [191]
- Kim, J. et al. (2018), "Risk factors of opioid-induced adverse reactions in elderly male outpatients of Korea Veterans Hospital", *BMC Geriatrics*, Vol. 18/1, <http://dx.doi.org/10.1186/s12877-018-0990-1>. [150]
- Krug, E. et al. (2002), *World report on violence and health*, https://apps.who.int/iris/bitstream/handle/10665/42495/9241545615_eng.pdf;jsessionid=CF86A7C6BFEA223332EFEF1DAED53A69?sequence=1 (accessed on 1 August 2019). [29]
- Kvas, A. and J. Seljak (2014), "Unreported workplace violence in nursing", *International Nursing Review*, Vol. 61/3, pp. 344-351, <http://dx.doi.org/10.1111/inr.12106>. [85]
- La Frenais, F. et al. (2018), *Temporal Trends in Analgesic Use in Long-Term Care Facilities: A Systematic Review of International Prescribing*, Blackwell Publishing Inc., <http://dx.doi.org/10.1111/jgs.15238>. [149]
- Lagoe, R. et al. (2005), "A community-wide program to improve the efficiency of care between nursing homes and hospitals", https://www.researchgate.net/publication/288363686_A_community-wide_program_to_improve_the_efficiency_of_care_between_nursing_homes_and_hospitals (accessed on 4 November 2019). [62]
- Lam, H. et al. (2018), "Challenges of conducting research in long-term care facilities: a systematic review.", *BMC geriatrics*, Vol. 18/1, p. 242, <http://dx.doi.org/10.1186/s12877-018-0934-9>. [23]
- Lavedán, A. et al. (2018), "Fear of falling in community-dwelling older adults: A cause of falls, a consequence, or both?", *PLOS ONE*, Vol. 13/3, p. e0194967, <http://dx.doi.org/10.1371/journal.pone.0194967>. [176]
- Lee, T. et al. (2016), "Home Health Care Management & Practice", Vol. 28/4, pp. 262-278, <http://dx.doi.org/10.1177/1084822316666368>. [77]

- Levinson, D. (2014), *Adverse Events in Skilled Nursing Facilities: National Incidence Among Medicare Beneficiaries (OEI-06-11-00370; 02/14)*. [207]
- Lowe, G. (2012), "How Employee Engagement Matters for Hospital Performance", *Healthcare Quarterly*, Vol. 15/2, <http://dx.doi.org/10.12927/hcq.2012.22915>. [103]
- Lown Institute (2019), *Medication Overload: America's Other Drug Problem*, <https://lowninstitute.org/wp-content/uploads/2019/04/medication-overload-lown-web.pdf> (accessed on 5 April 2019). [162]
- Lown Institute (2019), *Medication Overload: America's Other Drug Problem*, <https://lowninstitute.org/wp-content/uploads/2019/04/medication-overload-lown-web.pdf> (accessed on 31 October 2019). [151]
- Mair A, F., H. Alonso A and E. al. (2017), *The Simplicity consortium. Polypharmacy Management by 2030: a patient safety challenge*, SIMPATHY Consortium, Coimbra, <http://www.simplicity.eu/>. [222]
- Makai, P. et al. (2010), "Cost-effectiveness of a pressure ulcer quality collaborative", *Cost Effectiveness and Resource Allocation*, Vol. 8, <http://dx.doi.org/10.1186/1478-7547-8-11>. [120]
- Malet-Larrea, A. et al. (2016), "The impact of a medication review with follow-up service on hospital admissions in aged polypharmacy patients.", *British journal of clinical pharmacology*, Vol. 82/3, pp. 831-8, <http://dx.doi.org/10.1111/bcp.13012>. [169]
- Mark, B. et al. (2007), "Does safety climate moderate the influence of staffing adequacy and work conditions on nurse injuries?", *Journal of Safety Research*, <http://dx.doi.org/10.1016/j.jsr.2007.04.004>. [96]
- Masnoon, N. et al. (2017), *What is polypharmacy? A systematic review of definitions*, <http://dx.doi.org/10.1186/s12877-017-0621-2>. [154]
- Matsui, M. and E. Capezuti (2008), "Perceived Autonomy and Self-Care Resources among Senior Center Users", *Geriatric Nursing*, Vol. 29/2, pp. 141-147, <http://dx.doi.org/10.1016/j.gerinurse.2007.09.001>. [12]
- Maudgalya, T., A. Genaidy and R. Shell (2008), "Productivity-Quality-Costs-Safety: A Sustained Approach to Competitive Advantage - A Systematic Review of the National Safety Council's Case Studies in Safety and Productivity", *Human Factors and Ergonomics in Manufacturing*, Vol. 18/2, pp. 152-179, <http://dx.doi.org/10.1002/hfm.20106>. [230]
- Mavromaras, K. et al. (2017), *THE AGED CARE WORKFORCE, 2016*. [89]
- Mcandrew, R. et al. (2016), "Prevalence and patterns of potentially avoidable hospitalizations in the US long-term care setting", *International Journal for Quality in Health Care*, Vol. 28/1, pp. 104-109, <http://dx.doi.org/10.1093/intqhc/mzv110>. [17]
- McDonald, J. et al. (2017), "Complex home care: challenges arising from the blurring of boundaries between family and professional care", *Kotuitui*, Vol. 12/2, pp. 246-255, <http://dx.doi.org/10.1080/1177083X.2017.1373681>. [21]
- McDonald, L. et al. (2019), "Resident-to-Resident Abuse: A Scoping Review **", *Canadian Journal on Aging / La Revue canadienne du vieillissement*, Vol. 34/2, p. 1, <http://dx.doi.org/10.1017/S0714980815000094>. [200]

- McInnes, E. et al. (2015), *Support surfaces for pressure ulcer prevention*, John Wiley and Sons Ltd, <http://dx.doi.org/10.1002/14651858.CD001735.pub5>. [130]
- Meijers, J. et al. (2012), "Estimating the costs associated with malnutrition in Dutch nursing homes", *Clinical Nutrition*, Vol. 31/1, pp. 65-68, <http://dx.doi.org/10.1016/j.clnu.2011.08.009>. [209]
- Ministry of Social Affairs and Health (2018), *Quality recommendation to guarantee a good quality of life and improved services for older persons 2017–2019*. [14]
- MOHLTC (2017), *Attending Nurse Practitioners in Long-Term Care Homes Recruitment and Integration Toolkit Nursing Policy and Innovation Branch Ministry of Health and Long-Term Care*. [94]
- Mohr, D. et al. (2018), "Does Employee Safety Matter for Patients Too? Employee Safety Climate and Patient Safety Culture in Health Care", *Journal of Patient Safety*, Vol. 14/3, pp. 181-185, <http://dx.doi.org/10.1097/PTS.000000000000186>. [228]
- Morin, L. et al. (2018), "The epidemiology of polypharmacy in older adults: register-based prospective cohort study", *Clinical Epidemiology*, Vol. Volume 10, pp. 289-298, <http://dx.doi.org/10.2147/clep.s153458>. [164]
- Muench, U. et al. (2019), "Preventable hospitalizations from ambulatory care sensitive conditions in nursing homes: evidence from Switzerland", *International Journal of Public Health*, <http://dx.doi.org/10.1007/s00038-019-01294-1>. [213]
- Muir, T. (2017), "Measuring social protection for long-term care", *OECD Health Working Papers*, No. 93, OECD Publishing, Paris, <https://dx.doi.org/10.1787/a411500a-en>. [30]
- National Pressure Ulcer Advisory Panel, E. (2014), *Prevention and Treatment of Pressure Ulcers: Quick Reference Guide*, <http://www.nzwcs.org.nz> (accessed on 31 October 2019). [116]
- Nichols, E. et al. (2019), "Global, regional, and national burden of Alzheimer's disease and other dementias, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016", *The Lancet Neurology*, Vol. 18/1, pp. 88-106, [http://dx.doi.org/10.1016/S1474-4422\(18\)30403-4](http://dx.doi.org/10.1016/S1474-4422(18)30403-4). [3]
- Norton, E. (2017), *ADB Working Paper Series LONG-TERM CARE AND PAY-FOR-PERFORMANCE PROGRAMS Asian Development Bank Institute*, <https://www.adb.org/publications/long-term-care-and-pay-performance-programs> (accessed on 6 November 2019). [59]
- Nyborg, G. et al. (2017), "Potentially inappropriate medication use in nursing homes: an observational study using the NORGEP-NH criteria", *BMC Geriatrics*, Vol. 17/1, p. 220, <http://dx.doi.org/10.1186/s12877-017-0608-z>. [139]
- OECD (2020), *Who Cares? Attracting and Retaining Care Workers for the Elderly*. [69]
- OECD (2019), *Adequacy and affordability of long-term care services (LTC): Findings from the Measuring social protection project*. [8]
- OECD (2019), *Draft revised report on long-term care and health insurance--Stock Taking Report*. [46]
- OECD (2019), *Health at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/4dd50c09-en>. [5]

- OECD (2019), *Population data*, https://stats.oecd.org/Index.aspx?DataSetCode=EDU_DEM (accessed on 19 November 2019). [211]
- OECD (2018), "HEALTH AT A GLANCE: EUROPE 2018". [44]
- OECD (2018), *Health at Glance Europe: Fiscal Sustainability of Health Systems: Bridging Health and Finance Perspectives*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264233386-en>. [43]
- OECD (2018), *Measuring Patient Safety. Opening the Black Box*. [113]
- OECD (2018), *Risks that Matter*. [47]
- OECD (2018), *Stemming the Superbug Tide: Just A Few Dollars More*, OECD Health Policy Studies, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264307599-en>. [194]
- OECD (2017), *Health at a glance 2017: OECD Indicators*. [88]
- OECD (2017), *Preventing Ageing Unequally*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264279087-en>. [1]
- OECD (2017), *Tackling Wasteful Spending on Health*, https://books.google.fr/books?id=GIDfDQAAQBAJ&pg=PA52&lpg=PA52&dq=patient+safety+in+long+term+care+source+of+waste&source=bl&ots=ghDOjT7by2&sig=ACfU3U0jGVyBZlwPqFP1Ngf4mAXKIKKEdQ&hl=en&sa=X&ved=2ahUKEwitk_DosbTIAhUCx4UKHYPdA0cQ6AEwDnoECAkQAQ#v=onepage&q=long%20term%20care&f=false (accessed on 24 October 2019). [34]
- OECD (2017), *The Economics of Patient Safety in Primary and Ambulatory Care. Flying blind*. [40]
- OECD.Stat (2019), *OECD Statistics*, <https://stats.oecd.org/> (accessed on 22 November 2019). [214]
- OECD/EU (2013), *A Good Life in Old Age?: Monitoring and Improving Quality in Long-term Care*, OECD Health Policy Studies, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264194564-en>. [42]
- OIG (2019), *Trends in Deficiencies at Nursing Homes Show That Improvements Are Needed To Ensure the Health and Safety of Residents*, A-09-18-02010. [114]
- OIG (2018), *Adverse Events in Long-Term-Care Hospitals: National Incidence Among Medicare Beneficiaries*, <https://oig.hhs.gov/oei/reports/oei-06-14-00530.pdf> (accessed on 5 October 2019). [28]
- Osterman, P. (2017), *Who will care for us? Long-term care and the long-term workforce*. [218]
- Pakyz, A. and L. Dwyer (2010), "Prevalence of Antimicrobial Use among United States Nursing Home Residents: Results from a National Survey", *Infection Control & Hospital Epidemiology*, Vol. 31/6, pp. 661-662, <http://dx.doi.org/10.1086/653072>. [189]
- Papanicolas, I. et al. (2019), "Performance of UK National Health Service compared with other high income countries: observational study", *BMJ*, p. l6326, <http://dx.doi.org/10.1136/bmj.l6326>. [31]

- Peña-Longobardo, L. et al. (2016), "The Spanish long-term care system in transition: Ten years since the 2006 Dependency Act", *Health Policy*, Vol. 120/10, pp. 1177-1182, <http://dx.doi.org/10.1016/J.HEALTHPOL.2016.08.012>. [66]
- Pezzana, A. et al. (2015), "Nutritional care needs in elderly residents of long-term care institutions: Potential implications for policies", *Journal of Nutrition, Health and Aging*, Vol. 19/9, pp. 947-954, <http://dx.doi.org/10.1007/s12603-015-0537-5>. [204]
- Pham, B. et al. (2011), "Preventing pressure ulcers in long-term care: a cost-effectiveness analysis.", *Archives of internal medicine*, Vol. 171/20, pp. 1839-47, <http://dx.doi.org/10.1001/archinternmed.2011.473>. [119]
- Phelan, A. (2015), *Protecting care home residents from mistreatment and abuse: On the need for policy*, Dove Medical Press Ltd, <http://dx.doi.org/10.2147/RMHP.S70191>. [202]
- Posnett, J. and P. Franks (2008), *The burden of chronic wounds in the UK..* [129]
- Province of Nova Scotia (2018), *Workplace Safety for Nova Scotia's Home Care, Long Term Care & Disability Support Sector*, https://www.wcb.ns.ca/Portals/wcb/Workplace_Safety_Report_Final_June7.pdf?ver=2018-06-29-085548-870 (accessed on 1 August 2019). [86]
- Rau, J. (2018), *Medicare Cuts Payments To Nursing Homes Whose Patients Keep Ending Up In Hospital* | Kaiser Health News, <https://khn.org/news/medicare-cuts-payments-to-nursing-homes-whose-patients-keep-ending-up-in-hospital/> (accessed on 6 November 2019). [57]
- Registered Nurses' Association of Ontario (2019), *Transforming long-term care to keep residents healthy and Safe*, https://rnao.ca/sites/rnao-ca/files/Transforming_long-term_care_QPD_2019_Final_Public.pdf. [20]
- Registered Nurses' Association of Ontario (2018), *Public Inquiry into the Safety and Security of Residents in the Long-Term Care Homes System: Closing Submissions of the Registered Nurses' Association of Ontario.*, http://longtermcareinquiry.ca/wp-content/uploads/Closing-Submission_14_RNAO_Sept_20_2018.pdf. [19]
- Ricchizzi, E. et al. (2018), "Antimicrobial use in European long-term care facilities: results from the third point prevalence survey of healthcare-associated infections and antimicrobial use, 2016 to 2017", *Eurosurveillance*, Vol. 23/46, p. 1800394, <http://dx.doi.org/10.2807/1560-7917.ES.2018.23.46.1800394>. [190]
- Rice, N. and C. Normand (2012), "The cost associated with disease-related malnutrition in Ireland", *Public Health Nutrition*, Vol. 15/10, pp. 1966-1972, <http://dx.doi.org/10.1017/S1368980011003624>. [210]
- RNAO (2019), *Transforming long-term care to keep residents healthy and safe*. [52]
- RNAO (2018), "Public Inquiry into the Safety and Security of Residents in the Long-Term Care Homes System: Closing Submissions of the Registered Nurses' Association of Ontario". [92]
- RNAO (2016), *Assessment and Management of Pressure Injuries for the Interprofessional Team (3rd ed.)..* [118]
- RNAO (2012), *Preventing Falls and Reducing Injury from Falls (3rd Edition)*. [186]

- RNAO (2012), *Promoting Safety: Alternative Approaches to the Use of Restraints*. [182]
- RNAO (n.d.), *International Affairs & best Practice Guidelines Workshops*, <https://rnao.ca/bpg/get-involved/champions/workshops> (accessed on 30 January 2020). [183]
- Rothgang, H., M. Fünfstück and T. Kalwitzki (2020), "Personalbemessung in der Langzeitpflege", in *Pflege-Report 2019*, Springer Berlin Heidelberg, http://dx.doi.org/10.1007/978-3-662-58935-9_11. [56]
- Rovi, S. et al. (2009), "Mapping the Elder Mistreatment Iceberg: U.S. Hospitalizations With Elder Abuse and Neglect Diagnoses", *Journal of Elder Abuse & Neglect*, Vol. 21/4, pp. 346-359, <http://dx.doi.org/10.1080/08946560903005109>. [201]
- Rust, T. et al. (2008), "Broadening the patient safety agenda to include safety in long-term care.", *Healthcare quarterly (Toronto, Ont.)*, Vol. 11/3 Spec No., pp. 31-34, <http://dx.doi.org/10.12927/hcq.2008.19646>. [108]
- SAMHSA (2019), *Guidance on Inappropriate Use of Antipsychotics: Older Adults and People with Intellectual and Developmental Disabilities in Community Settings*. [143]
- Schildmeijer, K. et al. (2018), "Adverse events in patients in home healthcare: a retrospective record review using trigger tool methodology.", *BMJ open*, Vol. 8/1, p. e019267, <http://dx.doi.org/10.1136/bmjopen-2017-019267>. [82]
- Scott, I. and S. Jayathissa (2010), *Quality of drug prescribing in older patients: Is there a problem and can we improve it?*, <http://dx.doi.org/10.1111/j.1445-5994.2009.02040.x>. [160]
- Sears, N. et al. (2013), "The incidence of adverse events among home care patients", *International Journal for Quality in Health Care*, Vol. 25/1, pp. 16-28, <http://dx.doi.org/10.1093/intqhc/mzs075>. [80]
- Sethi, D. et al. (2011), *European report on preventing elder maltreatment*, <http://www.euro.who.int/pubrequest> (accessed on 7 August 2019). [196]
- Severens, J. et al. (2002), "The cost of illness of pressure ulcers in The Netherlands.", *Advances in skin & wound care*, Vol. 15/2, pp. 72-7, <http://www.ncbi.nlm.nih.gov/pubmed/11984050> (accessed on 31 October 2019). [121]
- Sexton, B. et al. (2018), "Providing feedback following Leadership WalkRounds is associated with better patient safety culture, higher employee engagement and lower burnout", *BMJ Qual Saf*, Vol. 27, pp. 261-270, <http://dx.doi.org/10.1136/bmjqs-2016-006399>. [104]
- Sexton, J. et al. (2017), "The associations between work-life balance behaviours, teamwork climate and safety climate: cross-sectional survey introducing the work-life climate scale, psychometric properties, benchmarking data and future directions.", *BMJ quality & safety*, Vol. 26/8, pp. 632-640, <http://dx.doi.org/10.1136/bmjqs-2016-006032>. [102]
- Simmons, S. et al. (2018), "Reducing Antipsychotic Medication Use in Nursing Homes: A Qualitative Study of Nursing Staff Perceptions", *Gerontologist*, Vol. 58/4, pp. e239-e250, <http://dx.doi.org/10.1093/geront/gnx083>. [142]

- Sinnige, J. et al. (2016), "Medication management strategy for older people with polypharmacy in general practice: a qualitative study on prescribing behaviour in primary care.", *The British journal of general practice : the journal of the Royal College of General Practitioners*, Vol. 66/649, pp. e540-51, <http://dx.doi.org/10.3399/bjgp16X685681>. [167]
- Slawomirski, L., A. Aaraaen and N. Klazinga (2017), *THE ECONOMICS OF PATIENT SAFETY Strengthening a value-based approach to reducing patient harm at national level*. [35]
- Sloane, P. et al. (2016), "Optimizing Antibiotic Use in Nursing Homes Through Antibiotic Stewardship.", *North Carolina medical journal*, Vol. 77/5, pp. 324-9, <http://dx.doi.org/10.18043/ncm.77.5.324>. [192]
- Smith, D. et al. (2010), "Hospital Safety Climate, Psychosocial Risk Factors and Needlestick Injuries in Japan", *Industrial Health*, Vol. 48, pp. 85-95, https://www.jstage.jst.go.jp/article/indhealth/48/1/48_1_85/pdf (accessed on 24 July 2019). [97]
- Søndergaard, J. et al. (2017), "Healthcare resource use and costs of opioid-induced constipation among non-cancer and cancer patients on opioid therapy: A nationwide register-based cohort study in Denmark.", *Scandinavian journal of pain*, Vol. 15, pp. 83-90, <http://dx.doi.org/10.1016/j.sjpain.2017.01.006>. [152]
- Spasova, S. et al. (2018), *Challenges in Long-term Care in Europe. A Study of National Policies. Synthesis Report*, <http://dx.doi.org/10.2767/84573>. [53]
- Spear, M. (2013), "Pressure Ulcers: What Are the Implications?", <http://dx.doi.org/10.1097/PSN.0b013e3182a57622>. [117]
- Srp, H. (2007), *Nutritional support strategy for protein-energy malnutrition in the elderly CLINICAL PRACTICE GUIDELINES GUIDELINES Nutritional support strategy for protein-energy malnutrition in the elderly*, <http://www.has-sante.fr> (accessed on 4 November 2019). [203]
- Stefanacci, R. (2019), "The Stars Are Changing: Nursing Home Compare and Five-Star Quality Rating Updates", *Annals of Long-Term Care: Clinical Care and Aging*, Vol. 27/4, pp. 17-18, <http://dx.doi.org/10.25270/altc.2019.04.00066>. [60]
- Stock, K. et al. (2017), "Prevalence of, and Resident and Facility Characteristics Associated With Antipsychotic Use in Assisted Living vs. Long-Term Care Facilities: A Cross-Sectional Analysis from Alberta, Canada", *Drugs & Aging*, Vol. 34/1, pp. 39-53, <http://dx.doi.org/10.1007/s40266-016-0411-0>. [147]
- Stuart, R., C. Lim and D. Kong (2014), "Reducing inappropriate antibiotic prescribing in the residential care setting: current perspectives", *Clinical Interventions in Aging*, Vol. 9, p. 165, <http://dx.doi.org/10.2147/CIA.S46058>. [187]
- Tak, S., L. Benefield and D. Mahoney (2010), "Technology for long-term care", *Research in Gerontological Nursing*, Vol. 3/1, pp. 61-72, <http://dx.doi.org/10.3928/19404921-20091103-01>. [70]
- Tampi, R. et al. (2016), "Antipsychotic use in dementia: a systematic review of benefits and risks from meta-analyses.", *Therapeutic advances in chronic disease*, Vol. 7/5, pp. 229-45, <http://dx.doi.org/10.1177/2040622316658463>. [133]

- Tanuseputro, P. et al. (2015), "Hospitalization and Mortality Rates in Long-Term Care Facilities: Does For-Profit Status Matter?", *Journal of the American Medical Directors Association*, Vol. 16/10, pp. 874-883, <http://dx.doi.org/10.1016/j.jamda.2015.06.004>. [212]
- The Council of Europe (2018), *The right of older persons to dignity and autonomy in care - Human Rights Comments - Commissioner for Human Rights*, <https://www.coe.int/en/web/commissioner/-/the-right-of-older-persons-to-dignity-and-autonomy-in-care> (accessed on 7 August 2019). [67]
- The Health Foundation (2011), *Does improving safety culture affect patient outcomes?*, The Health Foundation, https://patientsafety.health.org.uk/sites/default/files/resources/does_improving_safety_culture_affect_outcomes.pdf (accessed on 1 July 2019). [106]
- The Joint Commission (2015), *Sentinel Event Alert, Issue 55: Preventing falls and fall-related injuries in health care facilities*, <http://www.jointcommission.org> (accessed on 7 August 2019). [185]
- The King's Fund, (2013), *Polypharmacy and medicines optimisation: making it safe and sound*. [224]
- Thompson Coon, J. et al. (2014), "Interventions to Reduce Inappropriate Prescribing of Antipsychotic Medications in People With Dementia Resident in Care Homes: A Systematic Review", *Journal of the American Medical Directors Association*, Vol. 15/10, pp. 706-718, <http://dx.doi.org/10.1016/J.JAMDA.2014.06.012>. [131]
- Thornley, T. et al. (2019), "Antibiotic prescribing for residents in long-term-care facilities across the UK", *Journal of Antimicrobial Chemotherapy*, Vol. 74/5, pp. 1447-1451, <http://dx.doi.org/10.1093/jac/dkz008>. [188]
- Thorp, J. et al. (2012), "Workplace engagement and workers' compensation claims as predictors for patient safety culture", *Journal of Patient Safety*, Vol. 8/4, pp. 194-201, <http://dx.doi.org/10.1097/PTS.0b013e3182699942>. [105]
- Trygstad, T. et al. (2009), "Analysis of the North Carolina Long-Term Care Polypharmacy Initiative: A multiple-cohort approach using propensity-score matching for both evaluation and targeting", *Clinical Therapeutics*, Vol. 31/9, pp. 2018-2037, <http://dx.doi.org/10.1016/j.clinthera.2009.09.006>. [168]
- US National Center for Health Statistics (2017), "Chartbook on Long-term Trends in Health", <https://www.ncbi.nlm.nih.gov/books/NBK453378/> (accessed on 5 April 2019). [223]
- Van Den Bos, J. et al. (2011), "The \$17.1 billion problem: the annual cost of measurable medical errors.", *Health affairs (Project Hope)*, Vol. 30/4, pp. 596-603, <http://dx.doi.org/10.1377/hlthaff.2011.0084>. [127]
- van der Wolf, E. et al. (2019), "Well-being in elderly long-term care residents with chronic mental disorder: a systematic review", *Aging & Mental Health*, Vol. 23/3, pp. 287-296, <http://dx.doi.org/10.1080/13607863.2017.1408773>. [32]
- van Dusseldorp, L. et al. (2014), "Patient Safety Policy in Long-Term Care: A Research Protocol to Assess Executive WalkRounds to Improve Management of Early Warning Signs for Patient Safety.", *JMIR research protocols*, Vol. 3/3, p. e36, <http://dx.doi.org/10.2196/resprot.3256>. [74]
- van Middelaar, T. and E. van Charante (2018), "Deprescribing preventive medication in older patients", *British Journal of General Practice*, <http://dx.doi.org/10.3399/bjgp18x698933>. [158]

- Viktil, K. et al. (2007), "Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug-related problems", *British Journal of Clinical Pharmacology*, Vol. 63/2, pp. 187-195, <http://dx.doi.org/10.1111/j.1365-2125.2006.02744.x>. [161]
- Wakefield (2019), *European Nursing Homes Report Overview of the European Nursing Homes Market*. [50]
- Weech-Maldonado, R., D. Shea and V. Mor (2006), "The relationship between quality of care and costs in nursing homes.", *American journal of medical quality : the official journal of the American College of Medical Quality*, Vol. 21/1, pp. 40-8, <http://dx.doi.org/10.1177/1062860605280643>. [124]
- Welch, V. et al. (2017), "What interventions prevent falls in long-term care? The case of Saint-Louis Residence A Bruyère Rapid Review", https://www.bruyere.org/uploads/Final_Falls%20prevention%20in%20continuing%20care%20and%20long-term%20care.pdf (accessed on 7 August 2019). [174]
- Werner, R., R. Konetzka and D. Polsky (2013), "The effect of pay-for-performance in nursing homes: Evidence from state medicaid programs", *Health Services Research*, Vol. 48/4, pp. 1393-1414, <http://dx.doi.org/10.1111/1475-6773.12035>. [58]
- WHO (2019), *The Pursuit of Responsible Use of Medicines: Sharing and Learning from Country Experiences*, https://www.who.int/medicines/areas/rational_use/en/. [156]
- WHO (2018), *Elder abuse Key Facts*, <https://www.who.int/news-room/fact-sheets/detail/elder-abuse> (accessed on 1 August 2019). [198]
- WHO (2018), "WHO | Patient Safety". [41]
- WHO (2007), *Financing long-term care programmes in health systems With a situation assessment in selected high-, middle-and low-income countries*. [48]
- WHO (2007), *WHO Global report on falls Prevention in older Age*, https://www.who.int/ageing/publications/Falls_prevention7March.pdf (accessed on 7 August 2019). [173]
- Wilson, L., S. Kapp and N. Santamaria (2019), "The direct cost of pressure injuries in an Australian residential aged care setting", *International Wound Journal*, Vol. 16/1, pp. 64-70, <http://dx.doi.org/10.1111/iwj.12992>. [126]
- Wodchis, W., G. Teare and G. Anderson (2007), "Cost and quality: evidence from Ontario long term care hospitals.", *Medical care*, Vol. 45/10, pp. 981-8, <http://dx.doi.org/10.1097/MLR.0b013e3180ca95e9>. [123]
- Wu, C. et al. (2014), "Determinants of Long-Term Care Services among the Elderly: A Population-Based Study in Taiwan", *PLoS ONE*, Vol. 9/2, p. e89213, <http://dx.doi.org/10.1371/journal.pone.0089213>. [79]
- Xu, D., R. Kane and G. Arling (2019), "Relationship between nursing home quality indicators and potentially preventable hospitalisation", *BMJ Quality and Safety*, Vol. 28/7, pp. 524-533, <http://dx.doi.org/10.1136/bmjqs-2018-008924>. [111]

- Yon, Y. et al. (2017), "Elder abuse prevalence in community settings: a systematic review and meta-analysis", *The Lancet Global Health*, Vol. 5/2, pp. e147-e156, [195]
[http://dx.doi.org/10.1016/S2214-109X\(17\)30006-2](http://dx.doi.org/10.1016/S2214-109X(17)30006-2).
- Yon, Y. et al. (2019), "The prevalence of elder abuse in institutional settings: a systematic review and meta-analysis", *European Journal of Public Health*, Vol. 29/1, pp. 58-67, [197]
<http://dx.doi.org/10.1093/eurpub/cky093>.
- Young, W. and A. Mark Williams (2015), "How fear of falling can increase fall-risk in older adults: Applying psychological theory to practical observations", *Gait & Posture*, Vol. 41/1, pp. 7-12, [177]
<http://dx.doi.org/10.1016/j.gaitpost.2014.09.006>.
- Zhang, Y. et al. (2011), "Work organization and health issues in long-term care centers.", *Journal of gerontological nursing*, Vol. 37/5, pp. 32-40, [83]
<http://dx.doi.org/10.3928/00989134-20110106-01>.
- Zia, A., S. Kamaruzzaman and M. Tan (2015), "Polypharmacy and falls in older people: Balancing evidence-based medicine against falls risk", *Postgraduate Medicine*, Vol. 127/3, pp. 330-337, [175]
<http://dx.doi.org/10.1080/00325481.2014.996112>.

OECD Health Working Papers

A full list of the papers in this series can be found on the OECD website:

<http://www.oecd.org/els/health-systems/health-working-papers.htm>

No. 120 - SYSTEM GOVERNANCE TOWARDS IMPROVED PATIENT SAFETY - KEY FUNCTIONS, APPROACHES AND PATHWAYS TO IMPLEMENTATION (September 2020) Ane Auraaen, Kristin Saar and Niek Klazinga

No. 119 - CULTURE AS A CURE: ASSESSMENTS OF PATIENT SAFETY CULTURE IN OECD COUNTRIES (June 2020) Katherine de Bienassis, Solvejg Kristensen, Magdalena Burtscher, Ian Brownwood and Nicolaas S. Klazinga.

No. 118 - REASSESSING PRIVATE PRACTICE IN PUBLIC HOSPITALS IN IRELAND: AN OVERVIEW OF OECD EXPERIENCES (May 2020) Michael Mueller and Karolina Socha-Dietrich.

No. 117 - THE EFFECTIVENESS OF SOCIAL PROTECTION FOR LONG-TERM CARE IN OLD AGE (May 2020) Tiago Cravo Oliveira Hashiguchi and Ana Llana-Nozal

No. 116 - BRINGING HEALTH CARE TO THE PATIENT: AN OVERVIEW OF THE USE OF TELEMEDICINE IN OECD COUNTRIES (January 2020) Tiago Cravo Oliveira Hashiguchi

No. 115 - PERFORMANCE-BASED MANAGED ENTRY AGREEMENTS FOR NEW MEDICINES IN OECD COUNTRIES AND EU MEMBER STATES (December 2019) Martin Wenzl and Suzannah Chapman

No. 114 - METHODOLOGICAL DEVELOPMENT OF INTERNATIONAL MEASUREMENT OF ACUTE MYOCARDIAL INFARCTION (December 2019) Michael Padget and Ian Brownwood

No. 113 - THE IMPACT OF TECHNOLOGICAL ADVANCEMENTS ON HEALTH SPENDING - A LITERATURE REVIEW (AUGUST 2019) Alberto Marino and Luca Lorenzoni

No. 112 - CURRENT AND PAST TRENDS IN PHYSICAL ACTIVITY IN FOUR OECD COUNTRIES - EMPIRICAL RESULTS FROM TIME USE SURVEYS IN CANADA, FRANCE, GERMANY AND THE UNITED STATES (2019) Sahara Graf and Michele Cecchini

No. 111 - HEALTH SYSTEMS CHARACTERISTICS: A SURVEY OF 21 LATIN AMERICA AND CARIBBEAN COUNTRIES (2019) Luca Lorenzoni, Diana Pinto, Frederico Guanais, Tomas Plaza Reneses, Frederic Daniel and Ane Auraaen

No. 110 - HEALTH SPENDING PROJECTIONS TO 2030 (2019) Luca Lorenzoni, Alberto Marino, David Morgan and Chris James

No. 109 - EXPLORING THE CAUSAL RELATION BETWEEN OBESITY AND ALCOHOL USE, AND EDUCATIONAL OUTCOMES (2019) Sabine Vuik, Marion Devaux and Michele Cecchini

No. 108 - TRENDS IN LIFE EXPECTANCY IN EU AND OTHER OECD COUNTRIES: WHY ARE IMPROVEMENTS SLOWING? (2019) Veena Raleigh

Recent related OECD publications

HEALTH AT A GLANCE: LATIN AMERICA AND THE CARIBBEAN 2020

WHO CARES? ATTRACTING AND RETAINING CARE WORKERS FOR THE ELDERLY (2020)

REALISING THE POTENTIAL OF PRIMARY HEALTH CARE (2020)

WAITING TIMES FOR HEALTH SERVICES: NEXT IN LINE (2020)

IS CARDIOVASCULAR DISEASE SLOWING IMPROVEMENTS IN LIFE EXPECTANCY? OECD AND THE KING'S FUND WORKSHOP PROCEEDINGS (2020)

ADDRESSING CHALLENGES IN ACCESS TO ONCOLOGY MEDICINES (2020)

OECD REVIEWS OF PUBLIC HEALTH: KOREA - A HEALTHIER TOMORROW (2020)

COUNTRY HEALTH PROFILES (2019)

HEALTH IN THE 21ST CENTURY: PUTTING DATA TO WORK FOR STRONGER HEALTH SYSTEMS (2019)

THE SUPPLY OF MEDICAL ISOTOPES: AN ECONOMIC DIAGNOSIS AND POSSIBLE SOLUTIONS (2019)

HEALTH AT A GLANCE (2019)

THE HEAVY BURDEN OF OBESITY – THE ECONOMICS OF PREVENTION (2019)

HEALTH FOR EVERYONE? - SOCIAL INEQUALITIES IN HEALTH AND HEALTH SYSTEMS (2019)

RECENT TRENDS IN INTERNATIONAL MIGRATION OF DOCTORS, NURSES AND MEDICAL STUDENTS (2019)

PRICE SETTING AND PRICE REGULATION IN HEALTH CARE (2019) OECD/WHO Centre for Health Development in Kobe

ADDRESSING PROBLEMATIC OPIOIDS USE IN OECD COUNTRIES (2019)

OECD REVIEW OF PUBLIC HEALTH: JAPAN (2019)

OECD REVIEW OF PUBLIC HEALTH: CHILE (2019)

OECD HEALTH STATISTICS (2019)

(database available from: <https://www.oecd.org/health/health-statistics.htm>)

STEMMING THE SUPERBUG TIDE - JUST A FEW DOLLARS MORE (2018)

HEALTH AT A GLANCE: EUROPE 2018 – STATE OF HEALTH IN THE EU CYCLE (2018)

HEALTH AT A GLANCE: ASIA/PACIFIC 2018

PHARMACEUTICAL INNOVATION AND ACCESS TO MEDICINES (2018)

HEALTH AT A GLANCE: ASIA/PACIFIC (2018)

For a full list, consult the OECD health web page at <http://www.oecd.org/health/>