Learning and improving in long-term care internationally: the International Prevalence Measurement of Care Quality (LPZ)

Aprender e melhorar internacionalmente em cuidados de longa duração: a Medição de Prevalência Internacional de Qualidade de Cuidados (LPZ)

Irma H.J. Everink^a , Adam L. Gordon^{bc} , Suzanne Rijcken^a, Selvedina Osmancevic^d , Jos M.G.A. Schols^a

ABSTRACT

Long-term care (LTC) for older adults is an essential part of how health and social care systems respond to population ageing. Different long-term care systems in different countries have taken differing approaches to quality assurance, ranging from inspection-based regulatory systems to data and reporting-based regulatory systems. The significant variability in the ability of long-term care facilities to respond to the COVID-19 pandemic has led to increased recognition of the role of standardized data in informing structured approaches to quality assurance. The International Prevalence Measurement of Care Quality (in Dutch: Landelijke Prevalentiemeting Zorgkwaliteit – LPZ) was developed to guide continuous quality improvement in long-term care facilities. This special article describes the LPZ tool, developed to provide input for the learning and improvement cycle of multidisciplinary teams in the LTC sector and to help improve care quality.

KEYWORDS: long-term care; quality improvement; aged.

RESUMO

O cuidado de longa duração para idosos é uma parte essencial de como os sistemas de cuidados sociais e de saúde respondem ao envelhecimento da população. Distintos países e seus sistemas de cuidados de longa duração adotaram abordagens diferentes para a garantia da qualidade, que vão desde sistemas regulatórios baseados em inspeção até sistemas regulatórios baseados em dados e relatórios. A variabilidade significativa testemunhada entre as instituições de cuidados de longa duração em sua capacidade de responder à pandemia de COVID-19 levou a um maior reconhecimento do papel de dados padronizados para informar abordagens estruturadas para a garantia de qualidade. A Medição de Prevalência Internacional de Qualidade de Atendimento (em holandês: *Landelijke Prevalentiemeting Zorgkwaliteit* — LPZ) foi desenvolvida para orientar as unidades de cuidados de longa duração nas etapas de melhoria contínua da qualidade. Este artigo especial descreve a ferramenta LPZ, desenvolvida para fornecer subsídios para o ciclo de aprendizagem e melhoria de equipes multidisciplinares no setor de cuidados de longa duração e contribuir para a melhoria da qualidade do cuidado.

PALAVRAS-CHAVE: assistência de longa duração; melhoria de qualidade; idosos.

^aDepartment of Health Services Research and Care, Public Health Research Institute, Maastricht University – Maastricht, Netherlands.

^bUnit of Injury, Inflammation and Recovery Sciences, School of Medicine, University of Nottingham – Nottingham, United Kingdom.

^cNational Institute for Health Research Applied Research Collaboration, East Midlands – Nottingham, United Kingdom.

^dDepartment of Nursing Science, Medical University of Graz – Graz, Austria.

Correspondence data

Irma Everink – P.O. Box 616 – 6200 MD Maastricht – Netherlands – E-mail: i.everink@maastrichtuniversity.nl @EverinkIrma

Received on: 09/09/2021. Accepted on: 10/20/2021

How to cite this article: Everink IHJ, Gordon AL, Rijcken S, Osmancevic S, Schols JMGA. Learning and improving in long-term care internationally: the International Prevalence Measurement of Care Quality (LPZ). *Geriatr Gerontol Aging*. 2021;15:e0210056. <https://doi.org/10.53886/gga.e0210056>

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INTRODUCTION

Long-term care (LTC) is an essential part of how health and social care systems respond to population ageing. Although technological advances and novel approaches to service delivery enable care at home, a proportion of older people require health and personal care around the clock due to advanced frailty (with or without cognitive impairment) and social isolation. LTC residents have complex needs, which require multidimensional and multidisciplinary input, and care is often delivered with limited day-to-day involvement from family and friends. Robust mechanisms for quality assurance are therefore essential.

LTC systems in different countries, but also within countries over time, have taken different approaches to quality assurance. These range from inspection-based regulatory systems, where representatives of statutory bodies visit nursing homes to ascertain quality of care, to data and reporting-based regulatory systems, where standardized approaches to collecting quality-of-care data drive written reports to governing agencies.¹ The former is exemplified by the English LTC system, where the Care Quality Commission uses a mixture of announced and unannounced inspections to grade care homes on a scale from “needs improvement” to “outstanding”.² The latter is exemplified by the Dutch government’s requirement for nursing homes to annually measure and return a set of basic safety indicators, including process measures, such as the number of medication reviews, and outcome measures, such as pressure injury rates.³ Besides collecting safety indicators related to quality of care, LTC facilities also gather data related to satisfaction and perceived quality of care from the perspective of residents, family members, and care providers, using Patient Reported Outcome Measures, Patient Reported Experience Measures and face-to-face interviews.⁴ Combining these different data collection methods leads to a more integral view on quality of care.

The significant variability in the ability of LTC facilities to respond to the COVID-19 pandemic has led to an increased recognition of the role of standardized data in informing structured approaches to quality assurance. In countries where qualitative observation through inspection, rather than metrics, has driven regulatory decisions, it has been recognized that data could better inform regulatory decisions.⁵

Over and above regulation, another reason for increased focus on data in LTC is related to the importance of data as part of continuous quality improvement (CQI) in the LTC sector. CQI methods aim to improve the quality, safety, and efficiency of health care provision.⁶ Essential CQI features, as described by Rubenstein and colleagues, are systematic data-guided activities, iterative developments and testing processes, and designing with local conditions in mind.^{6,7}

For the first CQI feature, “systematic data-guided activities”, unambiguous and efficient approaches to the collection and collation of quality-of-care data are required. The second feature, “iterative development and testing processes”, requires that data be fed back to care professionals in a useful and accessible way. This enables care professionals to prioritize specific areas and use data as the basis for quality improvement cycles. Care professionals need specific training in CQI for this process to work well – it cannot be taken for granted that health and social care staff have such skills.⁸

International prevalence measurement of care quality (the LPZ tool)

The International Prevalence Measurement of Care Quality (in Dutch: Landelijke Prevalentiemeting Zorgkwaliteit – LPZ) was developed to guide CQI in LTC facilities. The tool was developed in 1998 and is now led by the Living Lab in Ageing and Long-Term Care⁹ of Maastricht University, the Netherlands. It is currently used in five countries: Austria, the Netherlands, Switzerland, Turkey, and England.¹⁰

The LPZ was developed to provide input for the learning and improvement cycle of multidisciplinary teams in the LTC sector and to help improve care quality. It uses validated and reliable measures drawn from the scientific literature related to pressure injuries, continence, malnutrition, falls, restraints, and pain. These domains were chosen through consultation with (inter)national professionals and experts working in different health care sectors and through input from and review of (inter)national guidelines. The domains were chosen because they are common and influence care quality.¹⁰ Based upon the work of Donabedian,¹¹ LPZ aims to describe structures and processes which contribute to care outcomes. In addition to counting the prevalence of care problems, the LPZ also describes resident age, care dependency, (co)morbidities, and length of stay, alongside organizational measures that are established to prevent and/or treat care problems.

Procedure

Participating organizations — some of which represent groups of linked facilities — appoint one main coordinator who receives training from the LPZ research team. These coordinators also receive a protocol and all materials needed to perform the measurement. The coordinator then trains those in their own organization who will collect LPZ data about how to perform the measurement and use the data-entry program. In most countries, registered nurses or certified nurse assistants perform the measurements. By standardizing the measurements and providing training, information, and materials, self-report bias should be minimized.

After data entry, participating organizations receive the results of the measurement in Internet-based dashboards. Each organization's coordinator can decide who receives log-in accounts for the dashboard to access these results. The results enable internal and external benchmarking by showing background characteristics and prevalence rates on different levels: a ward level (for organizations with multiple wards or wings), a facility level, and an organizational level. The aggregated results of participating organizations can be reviewed on a national level. This means that organizations can compare results within their organization or with peer organizations. For example, staff can see if the prevalence of malnutrition differs between wards within their organization and compare their results at any of these levels to the aggregated results of similar facilities or wards. Benchmarking is only possible with similar organizational types or ward types. For England, this means that care homes with nursing can only be compared with other care homes with nursing, and care homes without nursing can only be compared with other care homes without nursing. In the Netherlands, the psychogeriatric wards and somatic wards can only be compared with other wards of the same type.

Taking advantage of the constellation of structure, process and outcome measures, prevalence rates, resident characteristics, and the availability of preventive measures and interventions can be compared between organizations and used to contextualize differences in outcome measures. If an organization performs better or worse than average in a particular domain, these additional measures could provide some explanation — either by highlighting differences in practice or in casemix. Organizations can get inspiration about how to improve care by comparing the extent and type of their preventive measures and interventions with the types and numbers of measures taken by similar organizations. This can provide important information for the quality improvement cycle.

Participation in LPZ measurement is voluntarily. If an organization decides to participate, it must include all of its locations and departments. The decision about which domains to measure can be taken at an organizational level or a facility level. Thus, specific priorities within each organization or facility can drive where efforts are focused. So far, the LPZ tool has been used by > 1000 care homes.

International research

Even though patient safety and care quality are important topics in LTC sectors globally, and CQI receives more attention in the LTC sector, internationally comparable LTC data is scarce. This is a consequence of the differences

in definitions, methodologies, and instruments used to assess quality of care.¹⁰ On a European level, there is a lot of interest in multi-country studies, since this is the only way to compare health care outcomes between countries, taking into account cultural differences and differences in health care systems.¹² One recent global data-sharing initiative in LTC is the WE-THRIVE consortium. This consortium aims to specify a set of data elements focused on person-centered residential LTC that are internationally relevant and that can be used to share and compare data across countries.¹³ The LPZ instrument has comparable objectives and is an annual study that started as a national prevalence measurement of pressure injuries in 1998 and developed into an international prevalence measurement of care quality. The LPZ instrument and procedures are regularly updated by an international research group. One condition of participating in the international research group is being affiliated with a University or a University of applied sciences (the latter have a more practical profile and mainly offer higher education focused on a profession, unlike traditional universities, which are mainly research driven). Current partners of the international research group are Maastricht University (Netherlands – main coordinator), the Medical University of Graz (Austria), Bern University of Applied Sciences (Switzerland), the University of Nottingham and East Midlands Academic Health Science Network (England), and the University of Istanbul (Turkey). Since a standardized methodology (same instrument, same procedure) is used in all participating countries, the research group is able to perform (inter)national comparisons in a valid and reliable way.¹⁴ Organizations participating in LPZ measurement give consent to the universities to use the anonymized data for research purposes. Research output based on LPZ data has been extensive. Examples of recent research output include the association between oropharyngeal dysphagia and malnutrition in nursing home residents,¹⁵ a description of changes in the nutritional status of nursing home residents and the identification of factors associated with a decline in nutritional status,¹⁴ the relationship between the presence of baccalaureate-educated RNs and quality of care,¹⁶ and a comparison of the prevalence rate of pressure injuries and associated factors between countries.¹⁷

Similar across, and tailored to countries

As previously described, the strength of the LPZ instrument is the fact that the same instrument and same procedures are used in all participating countries. Still, national coordinators also require country-specific measurements to address areas of regional or national priority. These interests

can be based on national policy, specific interests at a governmental level, or research questions developed by the university team in support of a national measure. Therefore, participating countries will use the existing six care problems but will also have the opportunity to develop a country-specific module. As an example, a module was created in the Netherlands that included the basic quality indicators LTC facilities are obliged to measure, and this is now delivered to the Dutch government on an annual basis. Thus, LPZ-participating organizations automatically fulfill their reporting obligations. In England, a module on 'deterioration' was developed, focused on identifying acute deterioration of care home residents and communicating about it with health professionals outside care homes.¹⁸ This module was developed to align LPZ participation with national priorities in the LTC sector but was, in keeping with national principles, co-designed in collaboration with care home managers and staff to ensure it was feasible and reflected the priorities of the sector.

Strengths and limitations

Even though there are various instruments for measuring the quality of care in care homes, LPZ distinguishes itself by the fact that it has been proven valid and reliable for various aspects.¹⁹⁻²¹ In addition, as previously mentioned, the same instrument and procedures are used in all participating countries, making it possible to perform reliable comparisons and do international research. A third important strength is that the instrument and procedures are regularly updated by an international research group. However, some weaknesses should also be mentioned. First, due to its cross-sectional design, causal relationships cannot be proven. Even though a decline in national prevalence rates of various care problems over the years can be seen, it is difficult to prove an association between the declining prevalence rates and the use of LPZ. Moreover, since measurement is voluntarily in some countries, there could be a selection bias of participating organizations. Finally, even though LPZ has been used in pilot studies in Romania, Curaçao, New-Zealand, Germany, Indonesia and Surinam and seems feasible, in some of these countries it was evaluated in hospitals rather than care homes. Therefore, further research is needed about the applicability of the instrument in the long-term care sector outside Europe.

Sustainable in a turbulent setting

The LTC sector is dynamic, innovative, and constantly striving for improvement. To ensure that the LPZ instrument can continue to facilitate continuous quality improvement in the long term, various work streams are underway to further develop and optimize it.

First, we aim to make LPZ even more feasible by extracting routine health care data from electronic patient files. Making use of data that is already present leads to greater efficiency by reducing the workload of health care professionals. An essential condition for the use of these data is that they are reliable and recorded uniformly. To achieve this, collaboration with software developers of electronic patient files is underway.

Second, we aim to broaden LPZ to get a more complete picture of care quality in LTC organizations in ways that reflect their priorities. This will be accomplished by co-design with care providers, exploring the opportunity and need to include other care quality domains. For example, to prioritize person-centered care, the instrument could include measurements of the extent to which residents perceive their care to be personalized and their degree of care satisfaction. Patient Reported Outcome Measures and/or Patient Reported Experience Measures could be one way of doing this. The importance of relationship-centered care in LTC facilities could be accommodated through measures of employee satisfaction.²² Data collected to assess these topics can be quantitative and/or qualitative. Deciding how to collate and feed back a mix of qualitative and quantitative data is an important next step in this development process.

Third, we want to develop LPZ into an initiative that more fully addresses the needs of CQI. In the early stages of this work, LTC facilities were learning about the basics of CQI. Now, as they become more experienced, they require more sophisticated tools. At present, the focus of the LPZ instrument is mostly on data collection and interpretation of results to provide raw materials for the quality improvement cycle. Our provider partners, however, seek greater expertise and more highly developed skills to support them in using these data to drive improvement. This could, for instance, lead to the development of a digital toolbox with improvement aids. Early work on this in England has led to a suite of online learning — the "React to" series (<http://www.reactto.co.uk/>). In Austria, symposia to help LPZ participants with improvement cycles have facilitated measurement. In the Netherlands, infographics have been used to stimulate discussion and enable nursing home staff to engage with LPZ data in different ways. The end result of this development could incorporate all of these approaches — multiple ways of presenting data, connected to training and development symposia, supported by online learning materials. Piloting this approach in England has shown positive results for building CQI capacity in the care home sector.²³

Finally, we are exploring how to use LPZ data to enable better international comparisons. This would involve using

structure and process measures to contextualize outcomes more fully, enabling comparisons between countries with differing LTC policies and sectors.

COVID-19 has severely affected the long-term care sector internationally. Many of the above-described processes can address specific issues that have caused difficulty or controversy during the pandemic.²⁴ Robust, routinely collated variables from routine datasets could have better identified the impact of the pandemic early on. Comparable datasets between LTCs, coupled to an understanding of institutional variables, could have better enabled earlier understanding of what led particular LTCs to be affected more than others. Readily accessible, routinely collected Patient Reported Outcome Measures and Patient Reported Experience Measures and data related to basic care quality could have provided a better understanding of the impact of lockdown and social isolation, which was imposed on LTC residents in multiple jurisdictions during the pandemic and affected their care quality. With such data available, policymakers and clinicians could have more rapidly identified and mitigated the harm of lockdown and isolation, which is now becoming evident in the long term. Although it is unlikely that future health care crises will fully mirror the events of the COVID-19 pandemic, it is clear that standardized approaches to data, which is collected and collated frequently, would better enable policymakers to protect LTCs and would allow LTCs to better protect themselves against such catastrophic events in the future.

CONCLUSION

On a global level, the LTC sector is growing and constantly striving for quality improvement. The International

Prevalence Measurement of Care Quality (LPZ instrument), developed by Maastricht University, can facilitate quality improvement cycles. This instrument uses validated approaches drawn from the scientific literature and has been successfully implemented across multiple European countries. It has enabled facilities, organizations, regions, and countries to compare LTC quality. This benchmarking provides the basis for decisions about quality improvement. To accommodate the increasing sophistication with which LTC facilities approach CQI, LPZ is under constant development. Current foci are: the use of routine data, broadening the measure to accommodate principles of person- and relationship-centered care, developing a suite of resources and approaches to better enable facilities to use the LPZ as the basis for quality improvement, and using data to better enable and standardize international comparisons. We welcome international collaborators to help us take this work forward.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

FUNDING

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

AUTHOR CONTRIBUTIONS

IHJE: conceptualization, writing – original draft. ALG: writing – original draft. SR: writing – original draft. SO: writing – original draft. JMGA: writing – original draft.

REFERENCES

- Schols J, Gordon A. Residential and nursing home care: from the past to the future. Oxford: Oxford University Press; 2017.
- Care Quality Commission. State of Care 2021. Available from: <https://www.cqc.org.uk/publications/major-report/state-care>. Accessed in Nov 5, 2021.
- Handboek voor zorgaanbieders van verpleeghuiszorg. Toelichting op de indicatoren en meetinstructie verslagjaar 2020. Available from: <https://www.zorginzicht.nl/binaries/content/assets/zorginzicht/kwaliteitsinstrumenten/handboek-indicatoren-basisveiligheid-verslagjaar-2020.pdf>. Accessed in Nov 5, 2021.
- Sion KYJ, Verbeek H, Boer B, Zwakhalen SMG, Odekerken-Schröder G, Schols JMGA, et al. How to assess experienced quality of care in nursing homes from the client's perspective: results of a qualitative study. *BMC Geriatr*. 2020;20(1):67. <https://doi.org/10.1186/s12877-020-1466-7>
- Burton JK, Goodman C, Guthrie B, Gordon AL, Hanratty B, Quinn TJ. Closing the UK care home data gap - methodological challenges and solutions. *Int J Popul Data Sci*. 2021;5(4):1391. <https://doi.org/10.23889/ijpds.v5i4.1391>
- Hill JE, Stephani AM, Sapple P, Clegg AJ. The effectiveness of continuous quality improvement for developing professional practice and improving health care outcomes: a systematic review. *Implement Sci*. 2020;15(1):23. <https://doi.org/10.1186/s13012-020-0975-2>
- Rubenstein L, Khodyakov D, Hempel S, Danz M, Salem-Schatz S, Foy R, et al. How can we recognize continuous quality improvement? *Int J Qual Health Care*. 2014;26(1):6-15. <https://doi.org/10.1093/intqhc/mzt085>
- Devi R, Martin G, Banerjee J, Butler L, Pattison T, Cruickshank L, et al. Improving the quality of care in care homes using the quality improvement collaborative approach: lessons learnt from six projects conducted in the UK and The Netherlands. *Int J Environ Res Public Health*. 2020;17(20):7601. <https://doi.org/10.3390/ijerph17207601>
- Verbeek H, Zwakhalen SMG, Schols JMGA, Kempen GJM, Hamers JPH. The living lab in ageing and long-term care: a sustainable model for translational research improving quality of life, quality of care and quality of work. *J Nutr Health Aging*. 2020;24(1):43-7. <https://doi.org/10.1007/s12603-019-1288-5>

10. van Nie-Visser NC, Schols JMGA, Meesterberends E, Lohrmann C, Meijers JMM, Halfens RJG. An international prevalence measurement of care problems: study protocol. *J Adv Nurs*. 2013;69(9):e18-29. <https://doi.org/10.1111/jan.12190>
11. Donabedian A. The quality of care. How can it be assessed? *JAMA*. 1988;260(12):1743-8. <https://doi.org/10.1001/jama.260.12.1743>
12. Riedel M, Kraus M. The organisation of formal long-term care for the elderly. Results from the 21 European country studies in the ANCIEN project. ENEPRI Research Report No. 95, November 2011. Available from: https://www.researchgate.net/publication/277160500_The_organisation_of_formal_long-term_care_for_the_elderly_Results_from_the_21_European_country_studies_in_the_ANCIEN_project_ENEPRI_Research_Report_No_95_November_2011. Accessed in Nov 5, 2021.
13. Corazzini KN, Anderson RA, Bowers BJ, Chu CH, Edvardsson D, Fagertun A, et al. Toward common data elements for international research in long-term care homes: advancing person-centered care. *J Am Med Dir Assoc*. 2019;20(5):598-603. <https://doi.org/10.1016/j.jamda.2019.01.123>
14. Bauer S, Halfens RJG, Lohrmann C. Changes in nutritional status in nursing home residents and associated factors in nutritional status decline: a secondary data analysis. *J Adv Nurs*. 2017;73(10):2420-9. <https://doi.org/10.1111/jan.13297>
15. Huppertz VAL, Halfens RJG, van Helvoort A, de Groot LCPGM, Baijens LWJ, Schols JMGA. Association between oropharyngeal dysphagia and malnutrition in Dutch nursing home residents: results of the national prevalence measurement of quality of care. *J Nutr Health Aging*. 2018;22(10):1246-52. <https://doi.org/10.1007/s12603-018-1103-8>
16. Backhaus R, van Rossum E, Verbeek H, Halfens RJG, Tan FES, Capezuti E, et al. Relationship between the presence of baccalaureate-educated RNs and quality of care: a cross-sectional study in Dutch long-term care facilities. *BMC Health Serv Res*. 2017;17(1):53. <https://doi.org/10.1186/s12913-016-1947-8>
17. Meesterberends E, Halfens RJG, Spreeuwenberg MD, Ambergen TAW, Lohrmann C, Neyens JCL, et al. Do patients in Dutch nursing homes have more pressure ulcers than patients in German nursing homes? A prospective multicenter cohort study. *J Am Med Dir Assoc*. 2013;14(8):605-10. <https://doi.org/10.1016/j.jamda.2013.03.005>
18. Hailes L, Crocker C, McEwan K, Riley N, Gordon AL. How care homes identify acute deterioration in residents and communicate this to NHS professionals. *Age and Ageing*. 2019;48(Supplement_2):ii24-ii6. <https://doi.org/10.1093/ageing/afz061.06>
19. Kottner J, Raeder K, Halfens R, Dassen T. A systematic review of interrater reliability of pressure ulcer classification systems. *J Clin Nurs*. 2009;18(3):315-36. <https://doi.org/10.1111/j.1365-2702.2008.02569.x>
20. Kottner J, Halfens R. Moisture lesions: interrater agreement and reliability. *J Clin Nurs*. 2010;19(5-6):716-20. <https://doi.org/10.1111/j.1365-2702.2009.03109>
21. Kottner J, Halfens R, Dassen T. Interrater reliability and agreement of the Care Dependency Scale in the home care setting in the Netherlands. *Scand J Caring Sci*. 2010;24 Suppl 1:56-61. <https://doi.org/10.1111/j.1471-6712.2009.00765.x>
22. Dewar B, Nolan M. Caring about caring: developing a model to implement compassionate relationship centred care in an older people care setting. *Int J Nurs Stud*. 2013;50(9):1247-58. <https://doi.org/10.1016/j.ijnurstu.2013.01.008>
23. Gordon AL, O'Hagan B, Riley N, Alder E, Howard G, Wade S, et al. A quality improvement collaborative focussed on safety in care homes in the East Midlands: lessons learned and possible models for scale-up. University of Nottingham [Internet] 2021 [Accessed in 2021 Nov 5]. Available in: <https://rdmc.nottingham.ac.uk/handle/internal/9152>. <http://doi.org/10.17639/nott.7126>
24. Devi R, Hinsliff-Smith K, Goodman C, Gordon AL. The COVID-19 pandemic in UK care homes - revealing the cracks in the system. *Jour Nursing Home Res*. 2020;6:58-60. <http://doi.org/10.14283/jnhrs.2020.17>