



## **Best Practice Measurement of Medication Adherence**

Non-adherence to prescribed long-term therapies is a significant contributor to avoidable health care costs<sup>i</sup>, and correctly identifying problems with adherence to prescribed medications is an important research focus in relation to many chronic conditions<sup>ii</sup>. The importance of addressing adherence issues through appropriate interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments<sup>iii</sup>.

Community pharmacist-led interventions have been shown to improve patients' medication adherence and result in better disease control<sup>iv</sup>. Regular monitoring of adherence, and timely identification of patients with medication adherence issues, is important to achieving these positive health outcomes. Electronic pharmacy dispensing records are accurate and practical for assessment of medication adherence<sup>v</sup>.

The two most common calculation methodologies used for measuring adherence are Medication Possession Ratio (MPR) and Proportion of Days Covered (PDC)<sup>vi</sup>. MPR is defined as the proportion (or percentage) of days' supply obtained during a specified time period or over a period of refill intervals. PDC is the number of days when the drug was available to the patient, divided by the number of days in the study period.

For the calculation of PDC, rather than using a summation of the days' supply as used for MDQ, prescription fills are entered as time arrays<sup>vii</sup>. If one time array overlaps with another (i.e. the patient refills the prescription prior to using the current supply of medication), the new time array is shifted to begin once the earlier dispensed quantity has been used up. As opposed to MPR, the PDC method cannot result in values greater than 100%.

PDC more accurately reflects patient adherence behavior, and it more effectively handles drug switching and prescription overlaps<sup>viii</sup>. Notably, the USA Pharmacy Quality Alliance states that PDC is the preferred method to measure adherence for chronic therapies<sup>ix</sup>.

The ideal implementation of PDC will allow the adherence score to be calculated for individual medications and for all medications in a prescribed regimen. For whole-of-regimen adherence, the calculation of days covered should only count days when all the prescribed medications were available<sup>x</sup>.

**The World Pharmacy Council examined measurement of adherence at its meeting in March 2019 and agreed to advocate the use of the Proportion of Days Covered method for adherence measurement using pharmacy dispensing records.**

**World Pharmacy Council  
October 2020**



## World Pharmacy Council Members



AUSTRALIA: The Pharmacy Guild of Australia

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UNITED STATES OF AMERICA: National Community Pharmacists Association

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**The World Pharmacy Council is an Associate Expert Group member of *Business at OECD*  
(Organisation for Economic Co-operation and Development)**

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<sup>i</sup> Iuga, Aurel O, and Maura J McGuire. "Adherence and health care costs." *Risk management and healthcare policy* vol. 7 35-44. 20 Feb. 2014, doi:10.2147/RMHP.S19801

<sup>ii</sup> Anghel, Laura Alexandra et al. "An overview of the common methods used to measure treatment adherence." *Medicine and pharmacy reports* vol. 92,2 (2019): 117-122. doi:10.15386/mpr-1201

<sup>iii</sup> World Health Organisation. Adherence to long-term therapies: evidence for action ([http://www.who.int/chp/knowledge/publications/adherence\\_report/en/](http://www.who.int/chp/knowledge/publications/adherence_report/en/))

<sup>iv</sup> Milosavljevic, Aleksandra et al. "Community pharmacist-led interventions and their impact on patients' medication adherence and other health outcomes: a systematic review." *International Journal of Pharmacy Practice* vol 26 issue 5. October 2018.

<sup>v</sup> ibid

<sup>vi</sup> [https://www.ispor.org/docs/default-source/publications/newsletter/measuring\\_multiple\\_medication\\_adherence\\_which\\_measure\\_when.pdf?sfvrsn=f9946e55\\_0](https://www.ispor.org/docs/default-source/publications/newsletter/measuring_multiple_medication_adherence_which_measure_when.pdf?sfvrsn=f9946e55_0)

<sup>vii</sup> <https://cdn.vanderbilt.edu/vu-wp0/wp-content/uploads/sites/190/2017/11/14191025/JDeClercq.pdf>

<sup>viii</sup> Zhu, Vivienne J et al. "A Comparison of Data Driven-based Measures of Adherence to Oral Hypoglycemic Agents in Medicaid Patients." *AMIA ... Annual Symposium proceedings. AMIA Symposium* vol. 2014 1294-301. 14 Nov. 2014

<sup>ix</sup> <https://www.pqaalliance.org/adherence-measures>

<sup>x</sup> [https://www.ispor.org/docs/default-source/publications/newsletter/measuring\\_multiple\\_medication\\_adherence\\_which\\_measure\\_when.pdf?sfvrsn=f9946e55\\_0](https://www.ispor.org/docs/default-source/publications/newsletter/measuring_multiple_medication_adherence_which_measure_when.pdf?sfvrsn=f9946e55_0)