Title: Association between interpersonal continuity of care and medication adherence in type 2 diabetes

Anara Richi Dossa, D.Pharm, PhD.[1,2], Jocelyne Moisan, Ph.D.[1,2], Line Guénette, Ph.D[1,2], Sophie Lauzier, Ph.D.[1,2], Jean-Pierre Grégoire, Ph.D.[1,2].

[1]Chair on adherence to treatments, Faculty of Pharmacy, Université Laval, Québec, Canada

[2] Population Health and Optimal Practices in Health Research Unit, CHU de Québec – Université Laval Research Center, Québec, Canada.

Corresponding author: Jean-Pierre Grégoire, Chaire sur l'adhésion aux traitements, Centre de recherche du CHU de Québec – Université Laval, 1050, chemin Se-Foy, Québec, QC, Canada, G1S 4L8.

Telephone number: 418- 682-7511 # 84664 Fax number: 418- 682-7962

e-mail address: jean-pierre.gregoire@pha.ulaval.ca

ABSTRACT

Background: Higher interpersonal continuity of care (ICoC) is associated with better health outcomes. The extent to which ICoC could also be associated with medication adherence has not been well established. We sought to determine whether higher ICoC is associated with medication adherence among patients who initiated an oral antidiabetes drug (AD) treatment.

Methods: We conducted a cohort study of new users of oral AD aged 18 or more years. Patients were categorized according to tertiles of their ICoC index measured during the 1st year after oral AD initiation. ICoC index is based on the number of different physicians seen and the number of visits to each physician in this period. Tertiles of ICoC index were used to categorize individuals into low, intermediate and high level of ICoC. Two constructs of medication adherence were assessed during the 2nd year: 1) persistence with AD, 2) compliance among those considered persistent. The association between ICoC and medication persistence and compliance was assessed using Generalized linear models.

Results: A total of 60,924 patients were included in the initial cohort. Compared to individuals with a high ICoC, those with intermediate and low ICoC were less likely to be persistent (adjusted prevalence ratio (aPR) 0.97, 95% confidence interval [CI] 0.96-0.98 and 0.96, 0.95-0.97, respectively) and compliant with their AD (aPR 0.98, 95% CI 0.97-0.99 and 0.95, 0.94-0.97, respectively).

Interpretation: Our results suggest that a higher ICoC is associated with a higher likelihood of persistence and compliance with AD although the magnitude of this association is weak.

Key words: Continuity of care; Medication adherence; Diabetes Mellitus, Type 2

INTRODUCTION

Interpersonal continuity of care (ICoC) refers to the ongoing relationship between a patient and an individual physician [1]. There is good evidence from a systematic review that a high ICoC is associated with decreased hospitalization and emergency department visits, and improved patient satisfaction [2]. To what extent a high ICoC is associated with a higher likelihood of medication adherence is less clear [2].

Medication adherence is made of two main constructs: persistence (consistently refilling prescriptions for the prescribed length of time) and compliance (taking the drug in accordance with the prescribed dosage and schedule) [3]. To our knowledge, the relationship between ICoC and medication adherence has been assessed in six studies [4-9]. In four of these studies [4,7-9], a positive relationship between ICoC and medication adherence was observed. For example, a high ICoC was associated with higher persistence with statins [8], and higher compliance with oral antidiabetes drugs (AD) [7], statins [9] and drugs used in heart failure [4]. Five of these studies [4,6-9] were however limited by the fact that their design was cross-sectional. Therefore, the temporal relationship between ICoC and medication adherence could not be established.

Type 2 diabetes is a chronic condition usually necessitating long-term use of drugs to control hyperglycemia. However, to a large extent the use of those drugs is not optimal. In one study conducted in Quebec, less than 79% of patients persisted with the oral AD one year after initiation and among them, only 78% were compliant as they obtained drug supplies for at least 80% of days during the year [10].

As type 2 diabetes patients may have to consult many physicians during their therapeutic journey [11], we hypothesized that higher ICoC could translate in a higher medication adherence. We

conducted a study aiming to assess the association between ICoC and each of the two main constructs of medication adherence among new users of oral AD: 1) persistence with AD; 2) compliance with AD among those persistent.

METHODS

Study design and data sources

We conducted a cohort study among patients insured by the Quebec public drug plan using medico-administrative data from the Quebec Health Insurance Board (*Régie de l'Assurance Maladie du Québec* [RAMQ]) and the Quebec registry of hospitalisations (*Maintenance et exploitation des données pour l'étude de la clientèle hospitalière* [Med-Écho]). The RAMQ databases contain information on individual characteristics (age, sex, guaranteed income supplement (GIS) status, public drug plan eligibility), use of outpatient medical services (date, primary diagnosis and the identification number of the physician consulted), drugs claimed (drug identification, date, quantity supplied, number of days' supply, and the pharmacy identification number). Med-Écho is the source of data for hospital admissions (dates, primary and secondary diagnoses). With a unique identifier, it is possible to link at individual level, the information contained in these databases.

ICoC was measured during the first year while medication adherence was assessed in the second year of follow-up (Figure 1). It was then possible to assess the temporal relationship between the two variables [2].

Patients

We included patients aged 18 or more years who were newly dispensed an oral AD between Jan.

1, 2000 and Dec. 31, 2006 (Figure 2). To identify new users, we excluded patients who had not been continuously eligible for the public drug plan, and who had no AD claim throughout the entire year before the first AD claim registered on or after Jan. 1, 2000. Those for whom we did not have a follow-up period of at least 730 days were also excluded. This was done to allow the measurement of ICoC and medication adherence in the first and the second year of follow-up, respectively. To obtain a measurement of outpatient drug compliance over a period of at least 90 days, we excluded patients who had 275 days or more of hospitalization in the first or in the second year after oral AD initiation. Moreover, to ensure a valid measurement of ICoC, as recommended by Bice [12], we excluded patients who had less than 3 or more than 50 outpatient visits in the 12 months after oral AD initiation.

Variables

We measured ICoC with an index proposed by Bice [12]. This index measures the extent to which ambulatory visits for a specific patient are dispersed among different physicians. This index takes into account the contribution of each physician in the continuity of the patients care. This index is calculated as follows: $= \frac{[\sum_{i=1}^{M} n_i^2] - N}{N\,(N-1)}$ (N= total number of outpatients visits; ni= number of visits to i^{th} different physician; i=1,2… M; M= number of physicians within the follow-up time). The values of the index range from 0 to 1, 1 indicating the highest level of ICoC. The highest level of ICoC means that the patient visits are concentrated among only one physician [12]. Since index scores have no validated thresholds, we categorized ICoC in three categories (low, intermediate and high) using tertiles, as did previous researchers [5,7,13].

We assessed medication adherence during the second year after oral AD initiation. Patients were considered persistent with their AD treatment if they had any oral AD or insulin available 730

days after oral AD initiation. This was estimated based on the number of days supplied at the most recent dispensing before the second anniversary date plus a permissible gap of 0.5 times the days' supply for oral ADs. The number of oral AD days' supply was derived directly from the RAMQ database. As the use of insulin may vary on a daily basis, the number of days' supply was beforehand defined as 90 for all insulin claims [10,14]. Patients hospitalized on day 730 were considered persistent if they had filled any oral AD or insulin in the period prior to the date of their most recent hospital entry along the same lines as those defined above.

We measured compliance with AD among those who persisted with their treatment using the proportion of days covered (PDC) [15]. The PDC was calculated as the total number of days covered by either any oral AD or insulin divided by the number of days in the second year after oral AD initiation i.e. 365. For oral ADs, the number of days' supply was derived directly from the RAMQ database and number of days' supply was beforehand defined as 90 for insulin claims [14]. As information on drugs taken in hospital is not recorded in Med-Écho, we removed the number of days spent in hospital from both the PDC numerator and denominator. Patients with a PDC of 80% or more were considered compliant. It has been shown that a PDC <80% predicts subsequent hospitalization in diabetes [16].

Covariates included socio-demographic, healthcare use characteristics, and those related to the first oral AD claim. We used socio-demographic characteristics at oral AD initiation: age (continuous), sex (men, women) and socioeconomic (no/partial/maximum GIS) status. We assessed the presence of healthcare use variables in the first year after oral AD initiation. Healthcare use variables included loyalty to a pharmacy (1; > 1 different pharmacies visited) and number of hospitalizations for any cause (continuous). In addition, we considered the number of distinct drugs claimed (continuous) as a co-morbidity indicator [17]. Characteristics related to the

initial oral AD claim included the type of treatment (metformin monotherapy, sulfonylurea monotherapy, other oral AD monotherapy, AD bi-therapy, AD tri-quadri-and penta-therapy), specialty of the prescriber (general practitioner, endocrinologist or internist, other) and calendar year (2000 to 2006).

Statistical analysis

We conducted two generalized linear models with a log link and a Poisson working model [18]. The first model assessed the association between ICoC index and persistence with AD, and the second the association between ICoC and compliance with AD among those persistent. In both models, potential confounders included age, sex, socioeconomic status, number of distinct drugs claimed, loyalty to a pharmacy, hospitalization for any cause, initial oral AD treatment type, calendar year of oral AD initiation and specialty of the initial oral AD prescriber. Adjusted prevalence ratios (APR) with their 95% confidence intervals (CI) were computed. We assessed multicollinearity using the procedure described by Belsley et al. [19]. We tested the sensitivity of our results to the 80% PDC threshold for compliance by repeating the analysis using 70% and 90% as cut-off points. Analyses were performed using SAS, version 9.4 [SAS Institute Inc., Cary, NC, USA].

RESULTS

A total of 60,924 patients were included in the study population. Their characteristics are displayed in Table 1. The median ICoC value (first quartile - third quartile) was 0.14 (0.04-0.33). The patients were categorized into low (0.00-0.06), intermediate (0.07-0.24) and high (0.25-1.00) level of ICoC.

A total of 49,007 (80.4%) patients were persistent with their AD treatment two years after oral

AD initiation (Table 2). Compared to patients with high ICoC (0.25-1.00), those with intermediate (0.07-0.24) and low ICoC (0.00-0.06) were 3% and 4% less likely to be persistent with their AD, respectively (adjusted prevalence ratio (aPR) 0.97, 95% confidence interval [CI] 0.96-0.98 and 0.96, 0.95-0.97, respectively) (Table 3). Among persistent patients, 39,246 (80.1%) complied with their AD (Table 2). Compared to patients with high ICoC, those with intermediate and low ICoC were 2% and 5% less likely to be compliant with their AD, respectively (aPR 0.98, 95% CI 0.97-0.99 and 0.95, 0.94-0.97, respectively) (Table 3). The association between ICoC and compliance with AD was not sensitive to change in the PDC cut-off points (data not shown).

INTERPRETATION

One main result emerges from our study: as the ICoC decreases, patients are less likely to persist and comply with their AD but the magnitude of those associations is low. The decreased likelihood to persist and be compliant with AD as the ICoC decreases is in line with results observed in four studies conducted among users of oral ADs [7], statins [8,9] and antihypertensive drugs [4]. For example, in a study by Chen et al. [7], compared to new users of oral ADs with a low index (0.00-0.22) of continuity of care, those with a medium (0.23-0.43) and a high index (0.44-1.00) were 1.8 fold and 3.4 fold more likely to have a one-year medication possession ratio ≥ 80%, respectively. In this latter study [7], associations were of a higher magnitude than those we observed. It is likely due to the fact that those researchers used odds ratios as measures of association whereas we used prevalence ratios. Odds ratios, as opposed to prevalence ratios, overestimate the risk ratio when the prevalence of the studied outcome in a study population is higher than 10% [18]. This is the case in our study: the prevalence of persistence and compliance was around 80%.

In contrast, our results are different from those observed in two studies, one conducted among patients treated for hypertension [5] and the other among patients treated for multiple chronic diseases [6]. In the first of those studies, Kerse et al. did not observe an association between ICoC and medication adherence. However, both ICoC and medication adherence were self-reported as opposed to being measured using physicians visits and pharmacy dispensing data as we did [6]. Self-reported measures of adherence exhibit poor agreement with those based on pharmacy data [20]. In addition, adherence was assessed with no attempt to distinguish persistence and compliance constructs from each other as we did [6]. Likewise, Robles et al. found no association between ICoC and compliance with antihypertensive drugs as measured by a 1-year PDC of 80% or more [5]. However, in this latter study, when patients who had been hospitalized or had a cardiovascular event were excluded, a positive association was observed between higher levels of ICoC and compliance.

The decreased likelihood of persistence and compliance we have observed among patients with lower ICoC suggests that the ICoC might have a small but positive effect on both persistence and compliance with AD. According to findings from previous studies on patients' preferences, patients reported to believe that ICoC improves their trust in their physician as well as their physician's ability to communicate health issues to them [21]. Although further research is needed to confirm the link between those latter attributes and ICoC, in prior studies, better physician communication skills [22] and patients' trust in the provider [23,24] were associated with self-reported medication adherence.

Our study has some limitations. First, we assumed that drugs claimed were all taken and we made no distinction between mono and polytherapy. As a result, we may have overestimated persistence and compliance with AD, thus leading to a non-differential misclassification with an

effect estimate biased toward the null. In addition, the RAMQ databases lack information on psychosocial variables (e.g. patient's perception of risk of disease and benefits of the treatment) that are likely to influence medication persistence and compliance [25]. Therefore, we were not able to adjust effect estimates for those potential confounding variables. Moreover, to get a valid ICoC measure we had to exclude patients who had less than three physicians visits in the 1-year period during which ICoC was assessed. To what extent these excluded patients are less sick or do not have an as good access to a physician as those included in the study is unknown. Finally, we assessed ICoC in the first year of treatment and persistence and compliance in the year after. Therefore we cannot assume that the association we have observed between ICoC and persistence and compliance would remain the same if those outcomes were assessed in subsequent years.

CONCLUSION

Prior studies have shown that patients with a high ICoC as opposed to those with a low ICoC have a lower likelihood of hospitalization and emergency department visits, and a higher likelihood of patient satisfaction [26]. Our results suggest that it may also be associated with better persistence and compliance with the AD among patients newly treated for type 2 diabetes, although the magnitude of this association is low.

Funding statement: The Chair on adherence to treatments funded this study. The Chair was supported by the Laval University Foundation and through unrestricted grants from AstraZeneca Canada, Merck Canada, Sanofi Canada, Pfizer Canada and the *Prends soin de toi* Program.

Declaration of authors competing interests: Line Guénette is supported by a career award (Clinical Research Scholar – Junior 1) from the *Fonds de recherche du Québec – Santé* (FRQ-S) and by the Jacques de Champlain SQHA-FRQ-S Award. Sophie Lauzier is supported by a career

award (Research Scholar – Junior 1) from the FRQ-S in partnership with the *Institut national d'excellence en santé et en services sociaux* (INESSS).

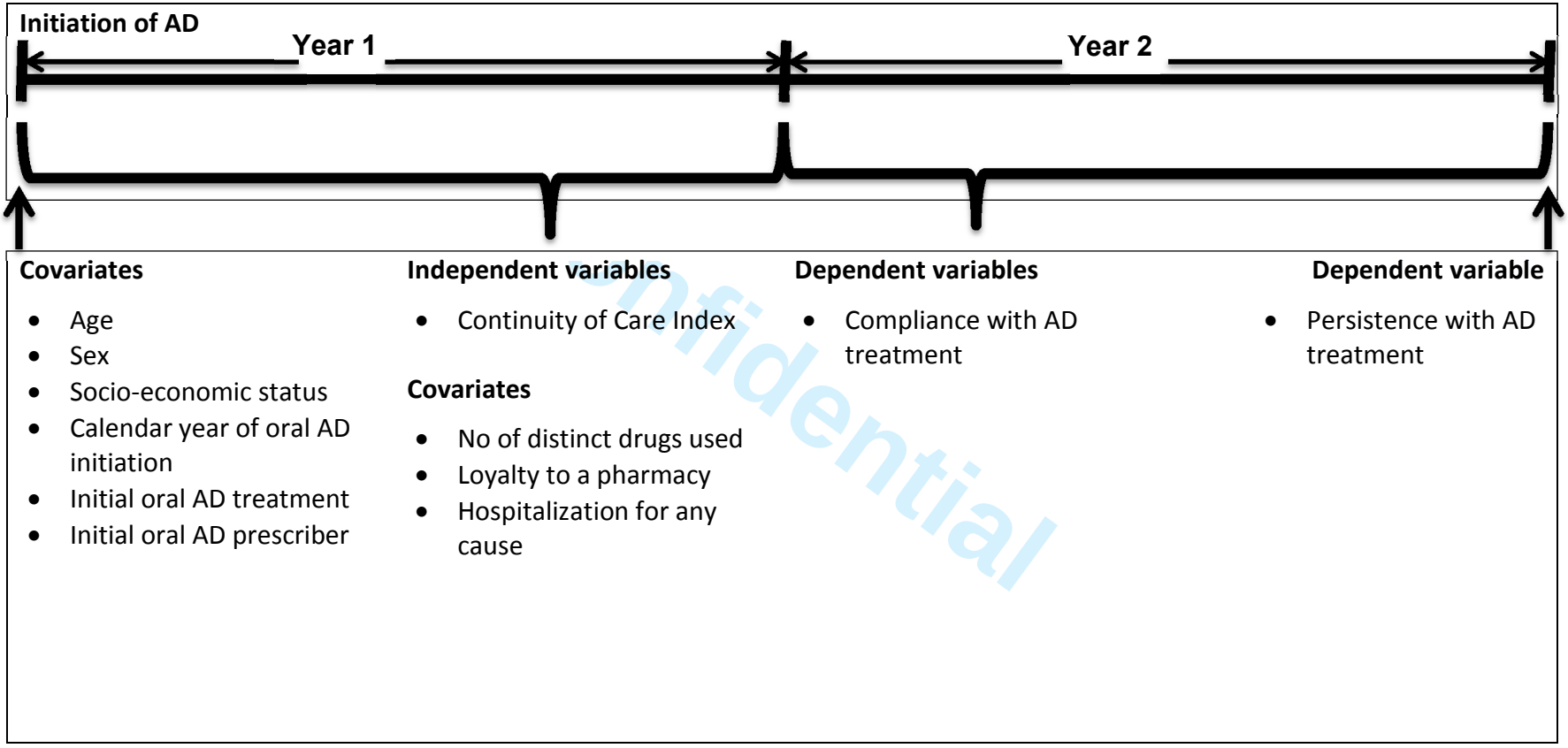
Acknowledgment

The authors thank Eric Demers for his assistance in statistical analyses.

References

1. Saultz JW. Defining and Measuring Interpersonal Continuity of Care. *Ann Fam Med.* 2003;1:134-43.
2. van Walraven C, Oake N, Jennings A, Forster AJ. The Association between Continuity of Care and Outcomes: A Systematic and Critical Review. *J Eval Clin Pract.* 2010;16:947-56.
3. Wahl C, Gregoire JP, Teo K, et al. Concordance, Compliance and Adherence in Healthcare: Closing Gaps and Improving Outcomes. *Healthc Q.* 2005;8:65-70.
4. Uijen AA, Bosch M, van den Bosch WJ, Bor H, Wensing M, Schers HJ. Heart Failure Patients' Experiences with Continuity of Care and Its Relation to Medication Adherence: A Cross-Sectional Study. *BMC Fam Pract.* 2012;13:86.
5. Robles S, Anderson GF. Continuity of Care and Its Effect on Prescription Drug Use among Medicare Beneficiaries with Hypertension. *Med Care.* 2011;49:516-21.
6. Kerse N, Buetow S, Mainous AG, 3rd, Young G, Coster G, Arroll B. Physician-Patient Relationship and Medication Compliance: A Primary Care Investigation. *Ann Fam Med.* 2004;2:455-61.
7. Chen CC, Tseng CH, Cheng SH. Continuity of Care, Medication Adherence, and Health Care Outcomes among Patients with Newly Diagnosed Type 2 Diabetes: A Longitudinal Analysis. *Med Care.* 2013;51:231-7.
8. Brookhart MA, Patrick AR, Schneeweiss S, et al. Physician Follow-up and Provider Continuity Are Associated with Long-Term Medication Adherence: A Study of the Dynamics of Statin Use. *Arch Intern Med.* 2007;167:847-52.
9. Benner JS, Tierce JC, Ballantyne CM, et al. Follow-up Lipid Tests and Physician Visits Are Associated with Improved Adherence to Statin Therapy. *Pharmacoeconomics.* 2004;22 (3):13-23.
10. Guenette L, Moisan J, Breton MC, Sirois C, Gregoire JP. Difficulty Adhering to Antidiabetic Treatment: Factors Associated with Persistence and Compliance. *Diabetes Metab.* 2013;39:250-7.
11. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes. 2013;37(1):S1-S212.
12. Bice TW, Boxerman SB. A Quantitative Measure of Continuity of Care. *Med Care.* 1977;15:347-9.
13. Chu HY, Chen CC, Cheng SH. Continuity of Care, Potentially Inappropriate Medication, and Health Care Outcomes among the Elderly: Evidence from a Longitudinal Analysis in Taiwan. *Med Care.* 2012;50:1002-9.
14. Bonafede MM, Kalsekar A, Pawaskar M, et al. A Retrospective Database Analysis of Insulin Use Patterns in Insulin-Naive Patients with Type 2 Diabetes Initiating Basal Insulin or Mixtures. *Patient Prefer Adherence.* 2010;4:147-56.
15. Choudhry NK, Shrank WH, Levin RL, et al. Measuring Concurrent Adherence to Multiple Related Medications. *Am J Manag Care.* 2009;15:457-64.
16. Karve S, Cleves MA, Helm M, Hudson TJ, West DS, Martin BC. Good and Poor Adherence: Optimal Cut-Point for Adherence Measures Using Administrative Claims Data. *Curr Med Res Opin.* 2009;25:2303-10.

17. Schneeweiss S, Seeger JD, Maclure M, Wang PS, Avorn J, Glynn RJ. Performance of Comorbidity Scores to Control for Confounding in Epidemiologic Studies Using Claims Data. *Am J Epidemiol.* 2001;154:854-64.
18. Lumley T, Kronmal R, Ma S. Relative Risks Regression in Medical Research: Models, Contrasts, Estimators and Algorithms. UW Biostatistics Working Paper Series, University of Washington. Paper 293. 2006:1-24. Available: http://biostats.bepress.com/uwbiostat/paper293 . Accessed 15 September, 2013.
19. Belsley, David. A., Edwin. Kuh, and Roy. E. Welsch (1980). Regression Diagnostics: Identifying Influential Data and Sources of Collinearity. New York: John Wiley and Sons.
20. Guenette L, Moisan J, Preville M, Boyer R. Measures of Adherence Based on Self-Report Exhibited Poor Agreement with Those Based on Pharmacy Records. *J Clin Epidemiol.* 2005;58:924-33.
21. Pandhi N, Saultz JW. Patients' Perceptions of Interpersonal Continuity of Care. *J Am Board Fam Med.* 2006;19:390-7.
22. Baumann M, Baumann C, Le Bihan E, Chau N. How Patients Perceive the Therapeutic Communications Skills of Their General Practitioners, and How That Perception Affects Adherence: Use of the Tcom-Skill Gp Scale in a Specific Geographical Area. *BMC Health Serv Res.* 2008;8:244.
23. Cuffee YL, Hargraves JL, Rosal M, et al. Reported Racial Discrimination, Trust in Physicians, and Medication Adherence among Inner-City African Americans with Hypertension. *Am J Public Health.* 2013;103:e55-62.
24. Berry LL, Parish JT, Janakiraman R, et al. Patients' Commitment to Their Primary Physician and Why It Matters. *Ann Fam Med.* 2008;6:6-13.
25. Zeber JE, Manias E, Williams AF, et al. A Systematic Literature Review of Psychosocial and Behavioral Factors Associated with Initial Medication Adherence: A Report of the Ispor Medication Adherence & Persistence Special Interest Group. *Value Health.* 2013;16:891-900.
26. van Walraven C, Taljaard M, Bell CM, et al. A Prospective Cohort Study Found That Provider and Information Continuity Was Low after Patient Discharge from Hospital. *J Clin Epidemiol.* 2010;63:1000-10.



Note: AD= Antidiabetes drugs

Figure 1. Study design and timeline for measurement of variables

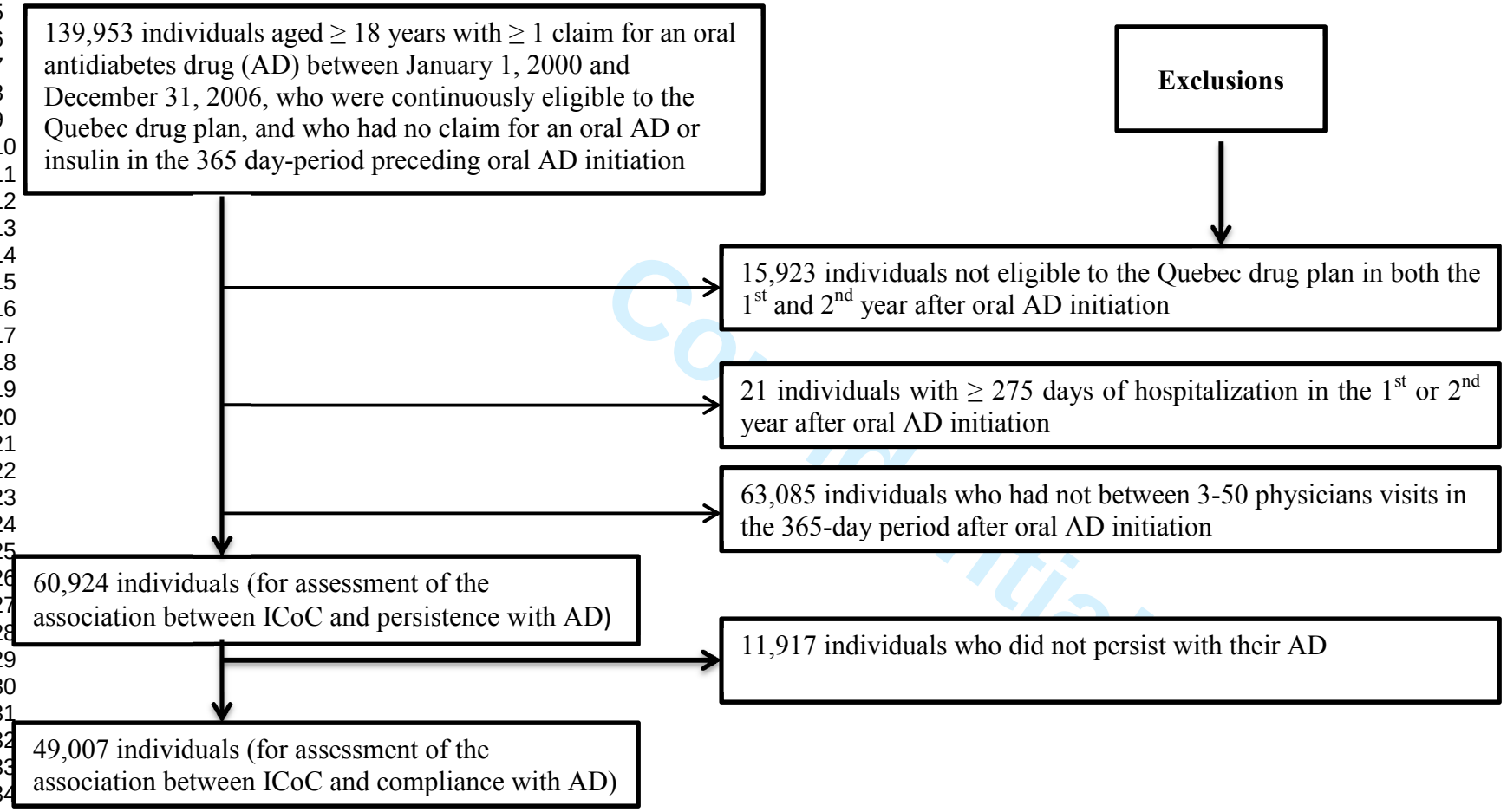


Figure 2. Selection of the study population

Table 1 Characteristics of patients at or in the year after oral antidiabetes drug initiation according to interpersonal continuity of care (ICoC) levels (n= 60,924)

Characteristics	Levels of ICoC						
	High (0.25–1.00) N = 20,305		Intermediate (0.07-0.24) N = 19,898		Low (0.00-0.06) N = 20,721		P-value
	N	%	N	%	N	%	
Sociodemographic variables							
Age in years (mean) (median) (Q1- Q3)	(64.2)	(67) (57-74)	(65.1)	(67) (58-74)	(65.0)	(67) (57-74)	<0.0001*
Sex							0.031
Men	9,730	47.9	9,486	47.7	9,675	46.7	
Women	10,575	52.1	10,412	52.3	11,046	53.3	
Socio-economic status at oral antidiabetes drug initiation							<0.0001
No guaranteed income supplement (GIS)	10,921	53.8	10,645	53.5	10,477	50.6	
Partial GIS	4,936	24.3	5,108	25.7	5,473	26.4	
Welfare or maximum GIS	4,448	21.9	4,145	20.8	4,771	23.0	
Healthcare use variables†							
Loyalty to a pharmacy							<0.0001
Yes	12,118	59.7	10,767	54.1	11,092	53.5	
No	8,187	40.3	9,193	45.9	9,629	46.5	
Hospitalization for any cause							<0.0001
Yes	3,863	19.0	7,877	39.6	9,038	43.6	
No	16,442	81.0	12,021	60.4	11,683	56.4	
Number of distinct drugs claimed (mean) (median) (Q1-Q3)	(10.5)	(10) (7-13)	(13.0)	(12) (9-16)	(13.3)	(12) (9-17)	<0.0001*
Initial oral AD related characteristics							
Initial oral AD treatment							<0.0001
Monotherapy with metformin	16,069	79.1	15,089	75.8	15,844	76.4	
Monotherapy with sulfonylurea	2,897	14.3	3,294	16.5	3,494	16.9	
Monotherapy with another oral AD	190	0.9	291	1.5	293	1.4	
Bitherapy	1,140	5.6	1,210	6.1	1,085	5.2	
Tri-quadri-and pentatherapy	9	0.1	14	0.1	5	0.1	
Initial oral antidiabetes drug prescriber							<0.0001
General practitioner	16,728	82.5	15,671	78.8	17,415	84.2	
Endocrinologist or internist	2,380	11.7	2,957	14.9	2,274	11.0	

Table 1 Characteristics of patients at or in the year after oral antidiabetes drug initiation according to interpersonal continuity of care (ICoC) levels (n= 60,924)

Characteristics	Levels of ICoC						
	High (0.25–1.00) N = 20,305		Intermediate (0.07-0.24) N = 19,898		Low (0.00-0.06) N = 20,721		P-value
	N	%	N	%	N	%	
Other	1,167	5.8	1,242	6.3	996	4.8	
Calendar year of oral antidiabetes drug initiation							<0.0001
2000	2,212	10.9	2,529	12.7	2,705	13.1	
2001	2,236	11.0	2,429	12.2	2,672	12.9	
2002	2,286	11.3	2.523	12.7	2,754	13.4	
2003	2,625	12.9	2,657	13.3	2,895	13.9	
2004	3,407	16.8	3,107	15.6	3,198	15.4	
2005	3,543	17.4	3,179	15.9	3,282	15.8	
2006	3,996	19.7	3,474	17.6	3,215	15.5	

* Chi-square test for proportions and Wilcoxon test for medians
† Variables measured in the 1st year following oral antidiabetes drug initiation (day of initiation and 365th day included)

Table 2 Persistence and compliance with antidiabetes drug treatment according to levels of interpersonal continuity of care (ICoC)

Medication adherence construct*	Levels of ICoC		
	High *N in category* (n with the adherence construct; %)	Intermediate *N in category* (n with the adherence construct; %)	Low *N in category* (n with the adherence construct; %)
Persistence with antidiabetes drug treatment among the 60,924 study patients	*20,305* (16,820; 82.8)	*19,898* (15,886; 79.8)	*20,721* (16,301; 78.7)
Compliance with antidiabetes drug treatment among the 49,007 patients who were persistent	*16,820* (13,592; 80.8)	*15,886* (12,817; 80.7)	*16,301* (12,837; 78.7)

* Medication adherence was measured in the 2nd year after oral antidiabetes drug initiation

Table 3 Adjusted prevalence ratios (APR) and 95% confidence intervals (CI) of persistence and compliance with antidiabetes drug treatment according to levels of interpersonal continuity of care (ICoC)

Medication adherence*	Levels of ICoC		
	High ICoC	Intermediate ICoC	Low ICoC
	APR	APR (95% CI)	APR (95% CI)
Persistence with antidiabetes drug treatment among the 60,924 study patients	1.00†	0.97†(0.96-0.98)	0.96†(0.95-0.97)
Complianc with antidiabetes drug treatment among the 49,007 patients who were persistent	1.00†	0.98†(0.97-0.99)	0.95†(0.94-0.97)

* Medication adherence (persistence and compliance) was measured in the 2nd year after oral antidiabetes drug initiation

† Adjusted for: age, sex and socioeconomic status at oral antidiabetes drug initiation, calendar year of oral antidiabetes drug initiation, number of distinct drugs used, hospitalization for any cause and loyalty to a pharmacy in the year following oral antidiabetes drug initiation, initial oral antidiabetes drug treatment and the initial oral antidiabetes drug prescriber.