SUPERIORITY OF NASAL SPRAY COMPARED TO ORALLY ADMINISTERED METOCLOPRAMIDE IN REDUCING HEALTHCARE COSTS FOR TREATING DIABETIC GASTROPARESIS PATIENTS

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Background on Gastroparesis

Diabetic Gastroparesis (DGP) is a chronic disorder of the stomach characterized by delayed gastric emptying which results in nausea, vomiting, early satiety, bloating, and severe abdominal pain.[1]

- Gastroparesis is common with a prevalence of 3% of US adults, and 57.4% of all cases have an etiology of Type 1 or 2 diabetes mellitus.[2]
- DGP leads to poorly controlled diabetes impacting quality of life and increasing the risk of mortality.[3]
- Symptom management includes dietary restrictions, antiemetics, and treatment with the only US approved medication, metoclopramide (MCP) and surgery.[4]
- In 2017, in a survey of 1,423 GP patients, 60% were dissatisfied or somewhat dissatisfied with available treatment options (sponsored by IFFGD).[5]
- DGP patients have two to three times greater healthcare costs compared to non-GP diabetic patients (inpatient, ED and outpatient visits).[6]
- In June 2020, MCP nasal spray (NMCP) became the first non-oral FDA-approved treatment* for patients with acute and recurrent DGP in the US.[7]

* Domperidone is approved for DGP in Canada.

References: 1. Horowitz et al. Diabetologia. 1989; 32:151-159. 2. Ye Y et al. Gastroenterology. 2022 Jan;162(1):109-121. 3. Shakhatreh M et al. Expert Rev Gastroenterol Hepatol. Aug;13(8):711-721. 4. Lata PF et al. Ann Pharmacother. 2003 Jan;37(1):122-6. 5. Yu D et al. Dig Dis Sci. 2017 Apr;62(4):879-893. 6. Chen YJ et al. Am J Gastroenterol. 2020;115(Supplement):686-687. 7. Gajendran M et al. Expert Rev Endocrinol Metab. 2021; 16(2):25-35

Recent Real-World Study Presented at DDW 2023 Showed Significant Reductions in Healthcare Resource Utilization (HCRU) in Patients Treated with Nasal vs Oral MCP

In a matched comparison of HCRU in 6 months post initiation of therapy:

- Patients treated with Nasal MCP (NMCP) had significantly fewer DGP-related office, ED, and inpatient hospital visits, compared to Oral patients.
- Similar reductions in all-cause healthcare utilization equated to an avoidance of 124 physician office visits, 167 fewer ED, 37 fewer inpatient, and 55 fewer outpatient visits for NMCP patients versus OMCP patients.
- The likelihood of a DGP patient treated with NMCP experiencing a visit to the ED or hospital outpatient for any cause was less than half that of patients treated with OMCP during the same period.[1]

Reference: 1. Kunkel et al. Oral plenary presentation at the Digestive Disease Week; 2023 May 6-9; Chicago, IL

Rationale & Objective

- Moderate to severe patients taking Nasal Metoclopramide (NMCP) in a phase 3 double-blind, placebo-controlled trial experienced a significant reduction in nausea and upper abdominal pain ($P<0.05$) compared to placebo.[1]
- Given the high burden DGP places on patients, we hypothesized that symptom control in patients treated with Nasal MCP may result in lower healthcare costs compared to patients treated with Oral MCP (OMCP).

Research Objective

To compare healthcare costs associated with inpatient hospitalization (IH), emergency department (ED), hospital outpatient (HO), physician office (PO), lab/home/telehealth (LHT), and pharmacy for DGP patients treated with NMCP vs. OMCP.

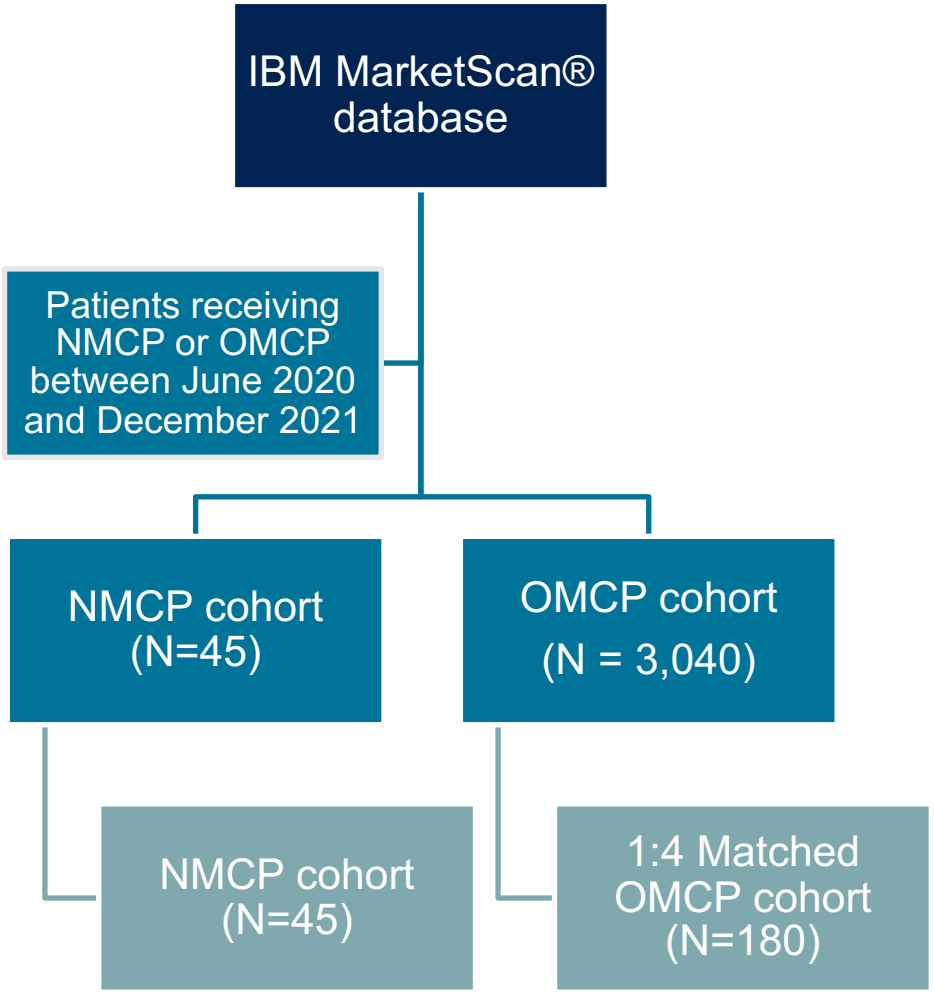
Reference: **1.** McCallum RW et al., Poster presented at: Digestive Disease Week 2017; Washington, DC

Study Design: Cohort Selection

IBM MarketScan® Research Database is a comprehensive **administrative claims database**.

It includes adjudicated and paid insurance claims for individuals*.

Payments are **actual costs** and not estimated mean costs.



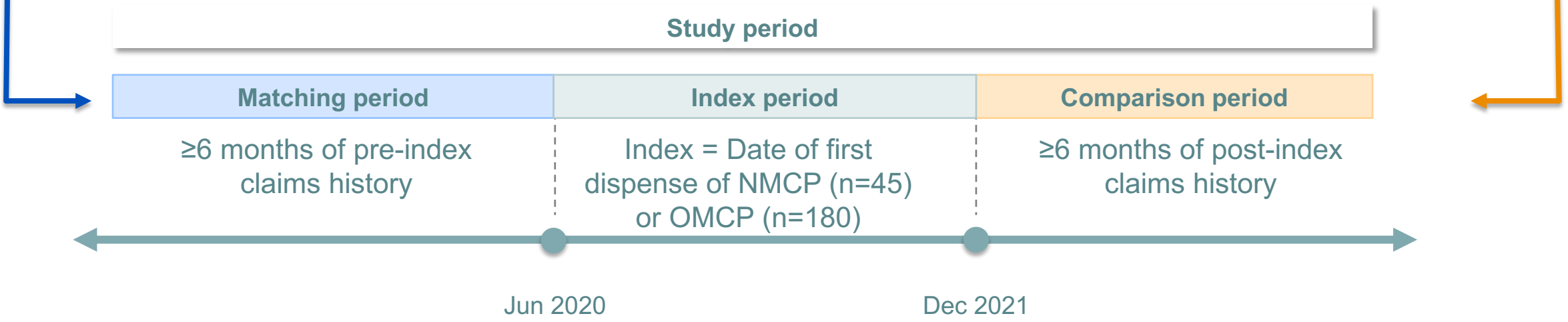
Cohort Selection Criteria

- ≥18 years of age at index date
- ≥2 insurance claims with a diagnosis for GP >30 days apart (ICD-10: K31.84)
- >1 insurance claim for diabetes with gastroparesis (E8.43, E9.43, E10.43, E11.43)

* individuals and their dependents, who receive health insurance coverage through their employers

Study Design: Statistical Analysis Plan

- NMCP patients were matched against OMCP patients in a 1:4 ratio, using propensity score matching.
- Healthcare Resource Utilization (HCRU) categories of inpatient hospitalization, ED, hospital outpatient (HO), office, lab/home/telehealth and was analyzed using generalized linear model between the two cohorts
- Mean (SD) real-world cost and mean differences were reported for both cohorts, and 95% confidence intervals obtained from appropriate generalized linear model.



Abbreviations: SD = Standard Deviation

Using Propensity Score Matching 45 NMCP Patients were Matched against 180 OMCP Patients for Statistical Analysis

- 1:4 match Nasal vs Oral Metoclopramide
- Cohorts were well-matched across:
  - Age
  - Sex
  - Region
  - Payer
  - DGP Severity*
  - Comorbidity index**

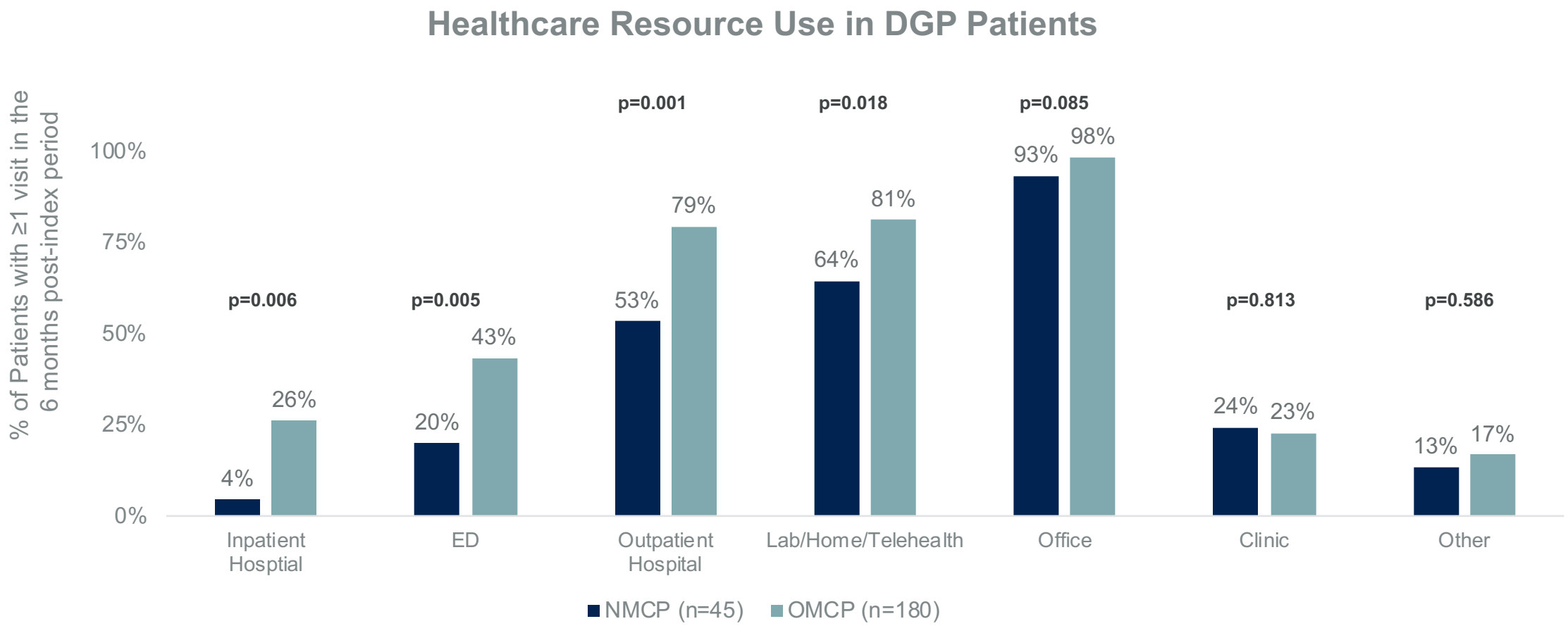
Post Propensity Score Matching (1:4 ratio)			
	NMCP (N=45)	Matched OMCP (N=180)	SMD
Age at index, yrs.			
Mean (SD)	47.7 (11.8)	49.3 (9.9)	---
18-35yrs	15.6%	11.1%	0.044
36-55yrs	55.6%	62.2%	-0.067
56-65yrs	26.7%	26.7%	0
66-95yrs	2.2%	0%	0.022
Male sex	24.4%	25%	-0.006
Region at index			
Northcentral	6.7%	7.2%	-0.006
Northeast	8.9%	7.8%	0.011
South	73.3%	73.9%	-0.006
West	2.2%	2.2%	0
Missing	8.9%	8.9%	0
Insurance at index			
Commercial	88.9%	90.6%	-0.017
Medicaid	8.9%	8.9%	0
Medicare	2.2%	0.6%	0.017
DGP Severity*	44.4%	47.2%	-0.028
Comorbidity Score, Mean (SD)**	2.2 (2.3)	2.3 (2.2)	-0.045

Abbreviations: DGP: Diabetic Gastroparesis; MCP: Metoclopramide; SD: Standard deviation; SMD: Standard mean difference;

* DGP Severity was defined as having experienced emergency department or inpatient hospitalization in the 6 months pre-index

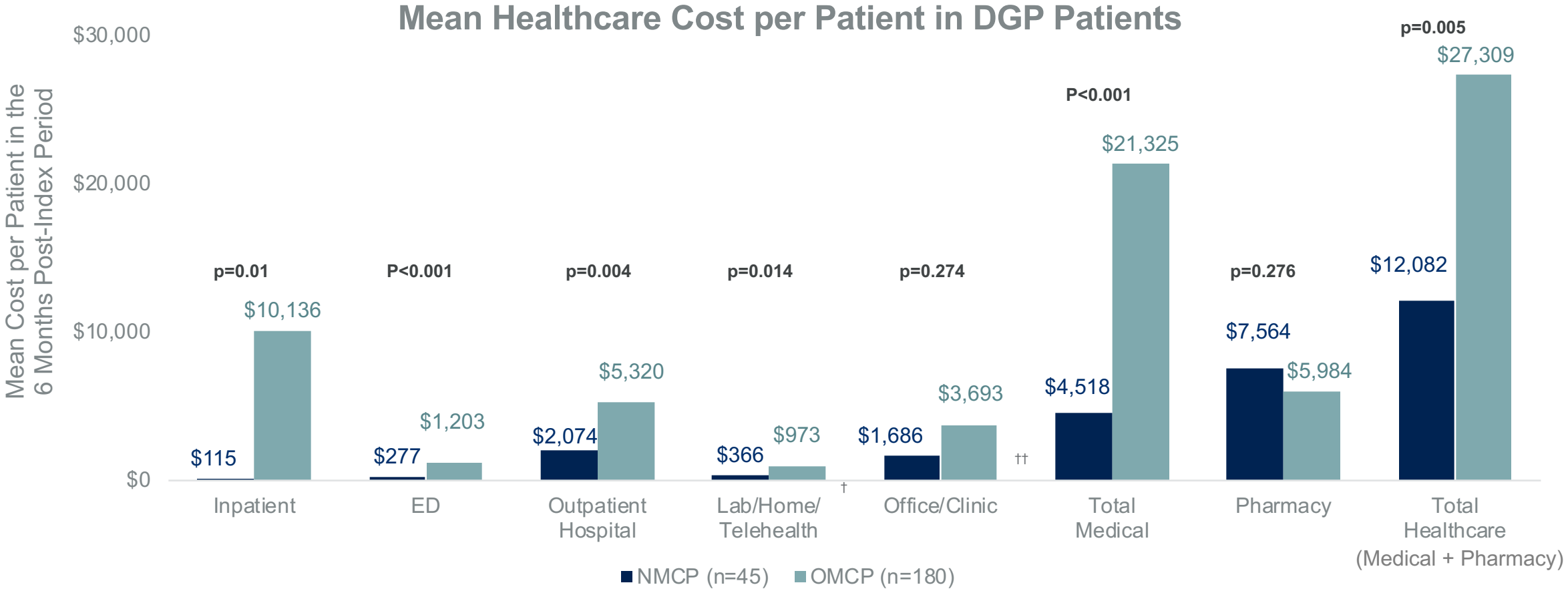
** Comorbidity Score measured using the Charlson Comorbidity Index (CCI). The severity of comorbidity is typically considered mild with CCI scores of 1–2, moderate with CCI scores of 3–4, and severe with CCI scores ≥5.

A Significantly Smaller Proportion of NMCP Patients versus OMCP had an Inpatient, Outpatient and ED visit



The proportion of NMCP-treated patients who experienced an inpatient, outpatient, ED and/or lab/home/telehealth visits were significantly lower than patients treated with Oral MCP, in the six months post-treatment index

Patients Treated with NMCP Had Significantly Lower All-Cause Healthcare Costs Compared to OMCP Patients



Lower healthcare costs in NMCP versus Oral MCP patients are driven by lower costs for Inpatient, ED and Outpatient Hospital visits. NMCP pharmacy cost was higher than generic OMCP, but not statistically significant.

† Includes Laboratory, Ambulatory, Image, Home, Telehealth and Other

†† Office is a location, other than a hospital, skilled nursing facility, State/local public health clinic, where the health professional routinely provides health examinations, diagnosis, and treatment of illness or injury on an ambulatory basis. Clinic includes walk-in health clinic, independent clinic and public/rural health clinic, that is not part of a hospital and that is organized and operated to provide preventive, diagnostic, therapeutic, rehabilitative, or palliative services to outpatients only.

Conclusions

In a matched Healthcare Resource Utilization cost comparison study based on 6 months post initiation of therapy in DGP patients:

- NMCP patients had significantly lower medical and overall healthcare costs for all-cause encounters compared to Oral MCP patients

- Lower real-world costs for NMCP versus OMCP patients were driven by markedly reduced spendings across key sites of care, including inpatient, emergency department and outpatient visits.

- These data offer real-world evidence for healthcare providers and payers, emphasizing the substantial benefits of the NMCP route for treating patients with DGP.

THANK YOU