



HKU
Med

Utilisation of Novel Oral Lipid-Lowering Drugs in Private Hospital Outpatient Pharmacy Practice

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INTRODUCTION

Cardiovascular disease (CVD) remains a leading cause of global mortality ¹, with dyslipidaemia as a major modifiable risk factor ². Statins remain first-line therapy, but residual risk persists due to intolerance, unmet low-density lipoprotein cholesterol (LDL-C) targets, or persistent hypertriglyceridaemia.

NOVEL ORAL LIPID-LOWERING AGENTS

- **Bempedoic acid**: an ATP-citrate lyase (ACLY) inhibitor that reduces LDL-C by 24-26% + significant major adverse cardiovascular events reduction in statin-intolerant patients³
- **Prescription omega-3 fatty acids** (omega-3s): reduce triglycerides (TG) via inhibition of hepatic TG-rich very-low-density lipoprotein (VLDL) synthesis
- Both agents are incorporated into 2026 ACC/AHA⁴ and 2025 ESC/EAS⁵ dyslipidaemia guidelines

KNOWLEDGE GAP

Real-world utilisation data of the above drugs in **Hong Kong (HK)** are scarce and largely based on Western or specialist-clinic cohorts, with **no evidence from the HK private sector**, where diverse prescribing and fewer formulary restrictions may signal early adoption trends.

OBJECTIVES

1. To identify patients prescribed with **bempedoic acid** and **prescription omega-3s** at Gleneagles Hospital Hong Kong (GHK) outpatient pharmacy
2. To describe the **demographic and clinical characteristics** of these patients, including medical and drug history
3. To explore the **characteristics of prescribers**, including specialty, prescribing patterns and temporal trends

PATIENT IDENTIFICATION

139

Total patients

80 (57.6%)

Bempedoic acid

59 (42.4%)

Omega-3s

No patients were dispensed icosapent ethyl (Vascepa®) despite HK registration in February 2022

DEMOGRAPHICS & CLINICAL CHARACTERISTICS

Characteristic	Bempedoic acid (n=80)	Omega-3 fatty acids (n=59)	p-value
Age, mean ± SD (yr)	61.4 ± 11.8	51.1 ± 12.4	<0.001
Male sex	48 (60.0%)	33 (55.9%)	0.631
ASCVD	52 (65.0%)	13 (22.0%)	<0.001
Hypertension	32 (40.0%)	11 (18.6%)	0.007
Hyperlipidaemia	30 (37.5%)	21 (35.6%)	0.818
Hypercholesterolaemia	10 (12.5%)	5 (8.47%)	0.450
Hypertriglyceridaemia	0 (0.00%)	3 (5.08%)	0.041
Liver disease	5 (6.25%)	9 (15.3%)	0.081
Statin intolerance	26 (32.5%)	3 (5.08%)	<0.001
Statin at baseline	67 (83.8%)	23 (39.0%)	<0.001
Ezetimibe at baseline	41 (51.3%)	6 (10.2%)	<0.001
Concomitant second-generation antipsychotic (SGA)	0 (0.00%)	4 (6.78%)	/
Concomitant glucocorticoid	3 (3.75%)	6 (10.2%)	/
Concomitant immunosuppressant	2 (2.50%)	4 (6.78%)	/

Bempedoic acid = older, ASCVD-dominant, LDL-C-driven atherosclerotic phenotype; Omega-3s = younger, TG-dominant metabolic phenotype
Statin intolerance, statin and ezetimibe use are more prevalent among patients prescribed with bempedoic acid

MATERIALS & METHODS

STUDY DESIGN & SETTING

Pilot, descriptive, retrospective observational cohort study conducted at GHK outpatient pharmacy.

STUDY POPULATION & PERIOD

Adult outpatients (age ≥18) dispensed at least one prescription of bempedoic acid (Nilemdo® or Nustendi®) or prescription omega-3s (Omacor® or Vascepa®) between 1 November 2019 and 31 October 2025.

DATA SOURCES

GHK electronic medical records (EMR); pharmacy dispensing records, outpatient clinical notes, ICD-10-coded diagnoses, and date-stamped laboratory test results. Prescriber specialty verified via the General and Specialist Registers of the Medical Council of Hong Kong.

KEY DEFINITIONS

Atherosclerotic Cardiovascular Disease (ASCVD) and statin intensity per 2018 ACC/AHA⁶; statin intolerance per 2022 National Lipid Association (NLA) criteria⁷/explicit physician documentation; guideline concordance per 2025 ESC/EAS⁵ (bempedoic acid), and 2018 ACC/AHA and 2023 Chinese lipid guideline⁸ (prescription omega-3s).

LABORATORY TEST ASSESSMENT WINDOWS

Baseline: -365 to +90 days from index date; follow-up: closest to date of data collection, taken 28-365 days post-index date

DATA ANALYSIS

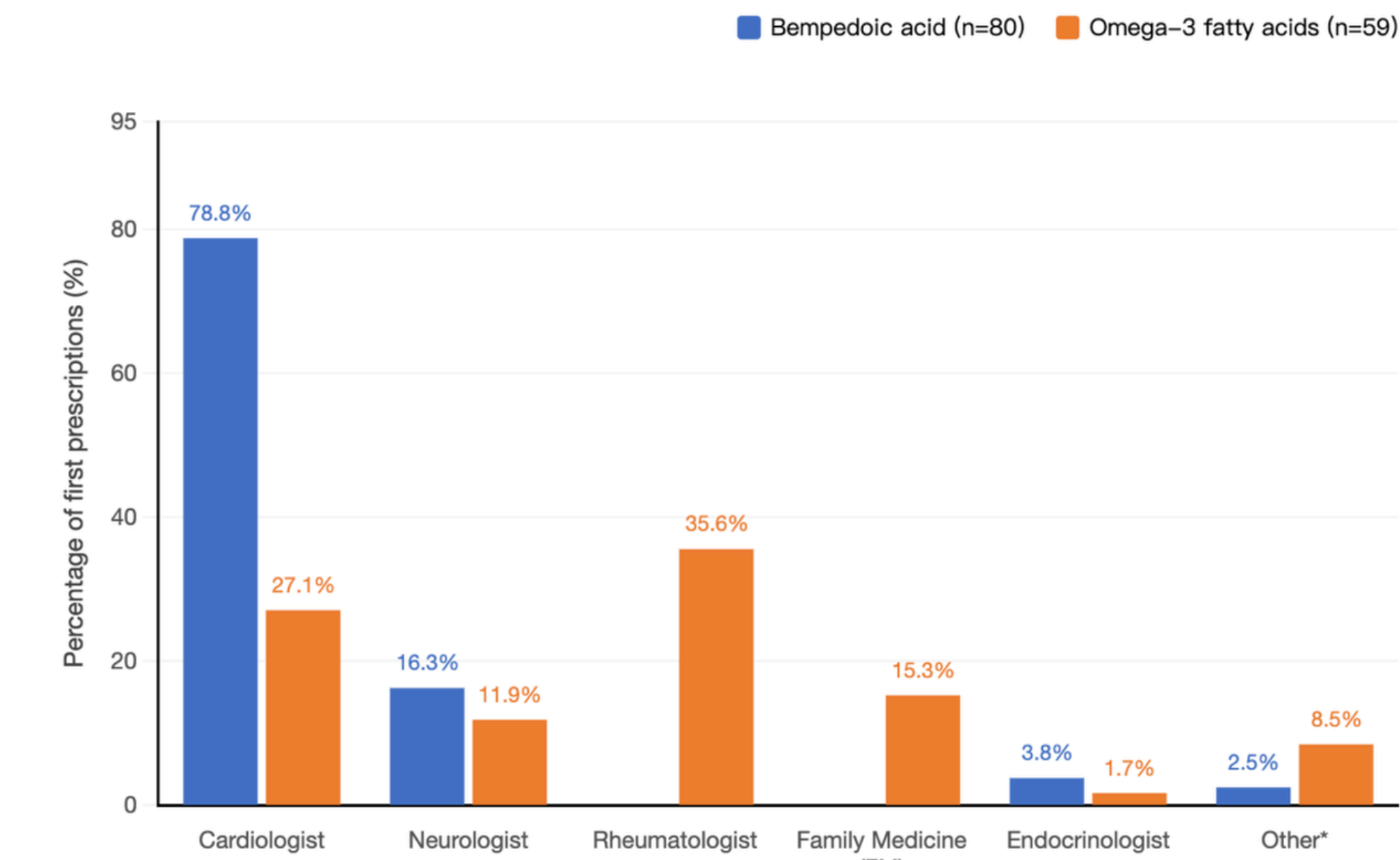
Descriptive (mean±SD, median IQR); between-group comparisons (independent samples t-test, chi-squared test/Fisher’s exact test); lipid changes (paired t-test/Wilcoxon signed-rank test/one-sample t-test); treatment selection predictors (multivariable logistic regression). Software: jamovi version 2.6.45, Excel.

ETHICS

Approved by HKU-GHK IRB (GHK-2025-013).

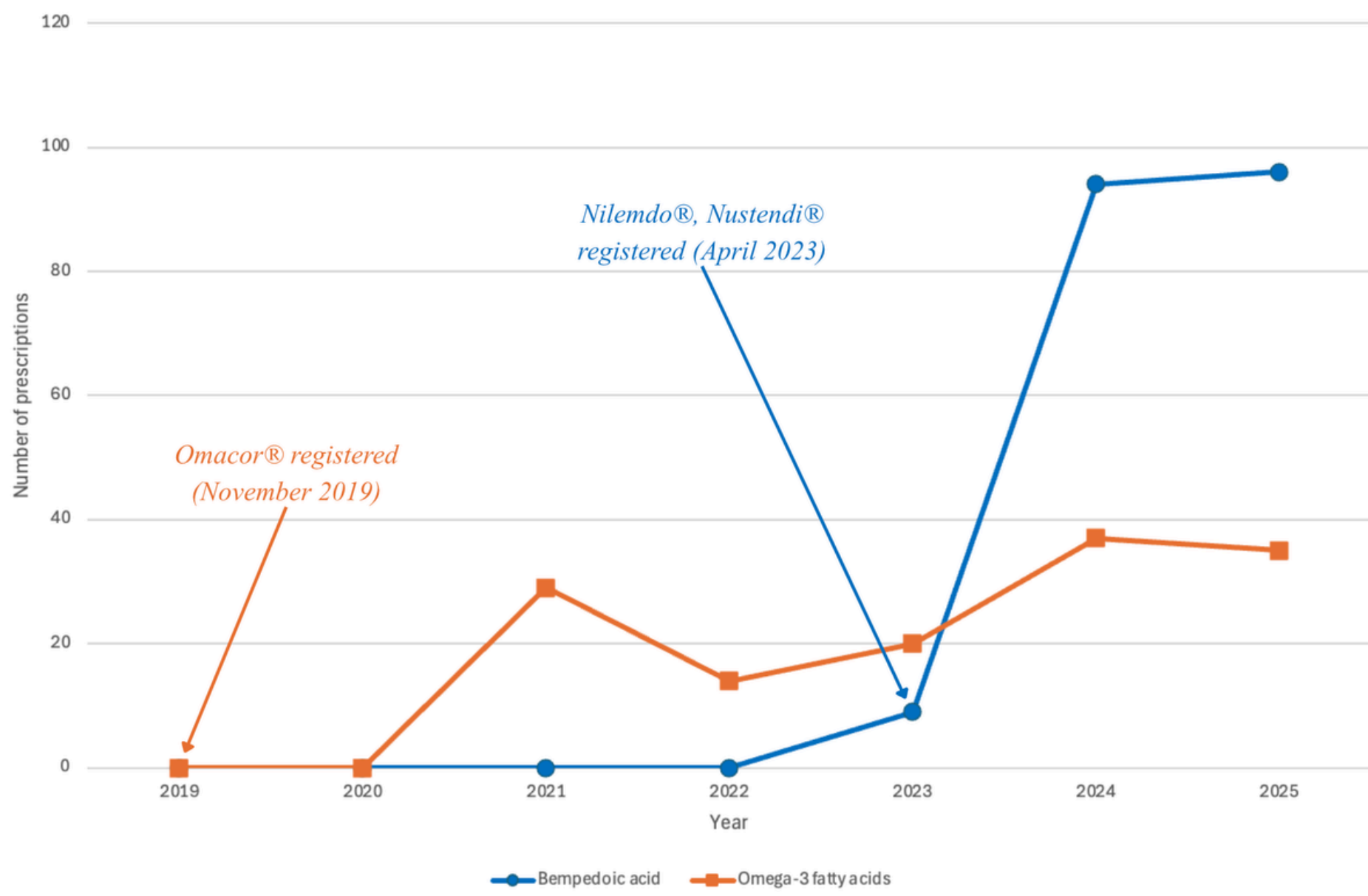
RESULTS

PRESCRIBER SPECIALTIES & UTILISATION PATTERNS



*Other: hepatology/gastroenterology and oncology for bempedoic acid; hepatology/gastroenterology, nephrology, and psychiatry for omega-3s.

PRESCRIBING TRENDS OVER TIME



LABORATORY OUTCOMES

BEMPEDOIC ACID: LDL-C CHANGE (N=57 PAIRED, 71.3%)

-17.8 (32.1)%

Mean relative change (SD) (p<0.001)

Baseline: 2.49 ± 1.07 mmol/L → Follow-up: 1.88 ± 0.92 mmol/L

Mean absolute change: -0.520 mmol/L (p<0.001)

OMEGA-3S: TG CHANGE (N=19 PAIRED, 32.2%)

-26.7 (32.2)%

Mean relative change (SD) (p=0.002)

Baseline: 2.73 ± 3.11 mmol/L → Follow-up: 2.53 ± 2.36 mmol/L

Mean absolute change: -0.668 mmol/L (p=0.007)

DISCUSSION

- **Patient Selection:** Bempedoic acid was prescribed to older patients with elevated LDL-C and established ASCVD; omega-3s were initiated in a younger, triglyceride-predominant, and more immunologically active population.
- **Prescriber Patterns:** Bempedoic acid prescribed predominantly by cardiologists, consistent with guideline positioning for high-risk and statin-intolerant patients; **neurologist**-initiated bempedoic acid suggests independent lipid management for stroke secondary prevention⁹; omega-3s prescribing dominated by **rheumatologists**, likely reflecting anti-inflammatory¹⁰ rather than TG-lowering intent.
- **Real-World Effectiveness:** Bempedoic acid’s mean LDL-C reduction (17.8%) falls below the expected real-world range¹⁴; omega-3s achieved 26.7% mean TG reduction.
- **Guideline Concordance:** Bempedoic acid concordance was broadly acceptable, with deviations including premature escalation and statin-naïve prescribing; omega-3s concordance was markedly lower, though some off-label use carries defensible clinical rationale (anti-inflammatory use in rheumatic disease ¹⁰, secondary hypertriglyceridaemia from glucocorticoids, SGAs and immunosuppressants⁴, and emerging evidence in metabolic dysfunction-associated steatotic liver disease¹² and mental illness ¹¹).
- **Practice gaps** may be remediable through pharmacist-led indication checklists, post-initiation surveillance, and structured prescriber feedback.

LIMITATIONS & FUTURE DIRECTIONS

1. **Missing follow-up lipid data** (~60-65%) was non-random → Longitudinal studies with systematic post-initiation lipid monitoring
2. **EMR underestimated comorbidity burden** (e.g., absent chronic kidney disease coding despite low estimated glomerular filtration rate)
3. Statin intolerance unverifiable against 2022 NLA criteria, so statin prevalence and concordance estimates may be overstated → Prospective designs with standardised statin intolerance classification
4. **Care fragmentation** prevented distinction between true statin-naïve prescribing and undocumented prior therapy → connect EMR with claims data¹³ and pilot shared EMR linkage across private and public sectors
5. **Selection bias:** patients with paired lipid data were likely more adherent, affecting effectiveness estimates → Active-comparator, new-user designs with persistence as a co-primary outcome
6. **Single-centre findings** may not generalise to broader HK private or public sectors → Multi-site studies across private and public hospital pharmacies

CONCLUSION

- First real-world characterisation of bempedoic acid and omega-3s utilisation in a HK private outpatient pharmacy
- Bempedoic acid guideline concordance broadly acceptable (67.7%); deviations included premature escalation and statin-naïve prescribing
- Omega-3s concordance markedly lower (6.8%, 11.9%), reflecting use rather than TG-lowering effects

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