

The pan-Canadian Tiered Pricing Framework and Chinese National Volume-Based Procurement

A Comparative Study Using Donabedian’s Structure-Process-Outcome Framework

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ABSTRACT

• Objective:

Generic drugs have been seen as a potentially powerful way to alleviate the financial burden on patients and healthcare systems. Two strategies for achieving rational prices of generic drugs are tiered pricing framework and pooled purchasing power. We compare the pan-Canadian Tiered Pricing Framework (TPF) and the Chinese National Volume-Based Procurement (NVBP) as comparators to explore the similarities and differences between the two mechanisms and summarize lessons for other jurisdictions.

• Methods:

This comparative study applies Donabedian’s structure-process-outcome framework to systematically analyze the macro contexts, procedures, and long- and short-term results of each pricing mechanism, and the interactions between them.

• Findings:

Structure: TPF is an upstream initiative aimed at lowering the prices of generic drugs and increasing coverage and price consistency. NVBP is a downstream national initiative prioritized for reducing drug prices to achieve value-based purchasing. Process: By associating the number of manufacturers with price cuts, TPF leaves the choice to manufacturers to decide if they want to enter a specific market. In contrast, the Chinese government determines NVBP list and has the authority to choose manufacturer(s) with the lowest price(s). TPF provides clear price information to potential suppliers with unclear order quantity. The NVBP drug price is determined by tendering, while procurement volume is clear and massive. Outcome: The effectiveness of TPF and NVBP is similar, with both achieving 53% price cut. Both TPF and NVBP experienced efficiency improvement since their establishment, with 98 and 86 drugs priced per year. By comparing 60 drugs covered by both programs, the NVBP price is 57% of that of the TPF counterpart on average (1.1% to 301.6%), by purchase power parity.

• Conclusion:

Major healthcare system reform objectives, pharmaceutical market maturity, and history are key factors that shape policy choices in China and Canada. The tiered pricing scheme is feasible in regions with a stable and mature pharmaceutical market, typically seen in high-income countries, while tendering is more workable in low- and middle-income countries where the pharmaceutical market is relatively weak and unstable with an obscure pricing mechanism.

POLICY IMPLICATION

- Access to pharmaceuticals is a multidimensional challenge that requires integrated policies and strategies with the engagement of all related parties. Experience in the two countries has shown that pricing mechanism can involve lots of piecemeal interactive problems, a sophisticated system with a robust long-range plan may address these better.
- Strengthen rational drug selection and pricing mechanisms through the pursuit of patient-centered, value-informed and evidence-based healthcare. Lowering the price of generic drugs is not the whole story, especially in tendering: over-cut price may poison government-industry relation and increase distrust. A rational drug pricing mechanism can only be achieved by massively collaboration among government, pharmaceutical manufacturers and the public.
- Involve multiple payers who want to be at the negotiation table, which not only could strengthen purchasing power, but also benefit more patients. Another important consideration is to avoid excluding potential drug suppliers from participating in the bidding process.

COMPARATIVE ANALYSIS

Structure

The Chinese healthcare system is undergoing several reform objectives, while the Canadian system is relatively stable. The pricing mechanisms of TPF and NVBP share the objective of lowering the price of generic drugs, but they have different missions due to differences in their healthcare systems. Canada has a mature pricing mechanism based on market principles, while China is still exploring a rational pricing system for drugs. The reimbursement health insurance system in China also contributes to differences in objectives between the two programs. NVBP focuses on reducing patients’ financial burden and promoting the use of generics as an alternative to brand-name drugs to alleviate cost pressure on patients and the health insurance system. The main objectives of TPF are to lower the prices of generic drugs and to increase coverage and price consistency across public drug plans.

Process

The process of drug pricing and procurement can provide feedback on the existing structure and is significantly influenced by structural factors. In Canada, price cap and tiered pricing schemes were implemented to ensure consistency in drug prices among provinces/territories. Tiered pricing frameworks are considered a better choice than price caps due to the latter’s key defects. Pharmaceutical market maturity is a foundational factor that explains the institutional choice of Canada and other countries in implementing tiered pricing frameworks. In contrast, volume-based tendering and procurement seem to be a better choice for LMICs like China with an unstable pharmaceutical manufacturer size. The Generics Consistency Evaluation (GCE) policy design is unique to China and aims to test the quality and efficacy of domestically produced generic drugs before participating in NVBP bidding. The GCE functions as a quality test, simplifies NVBP procedures, and improves the transparency of tendering.

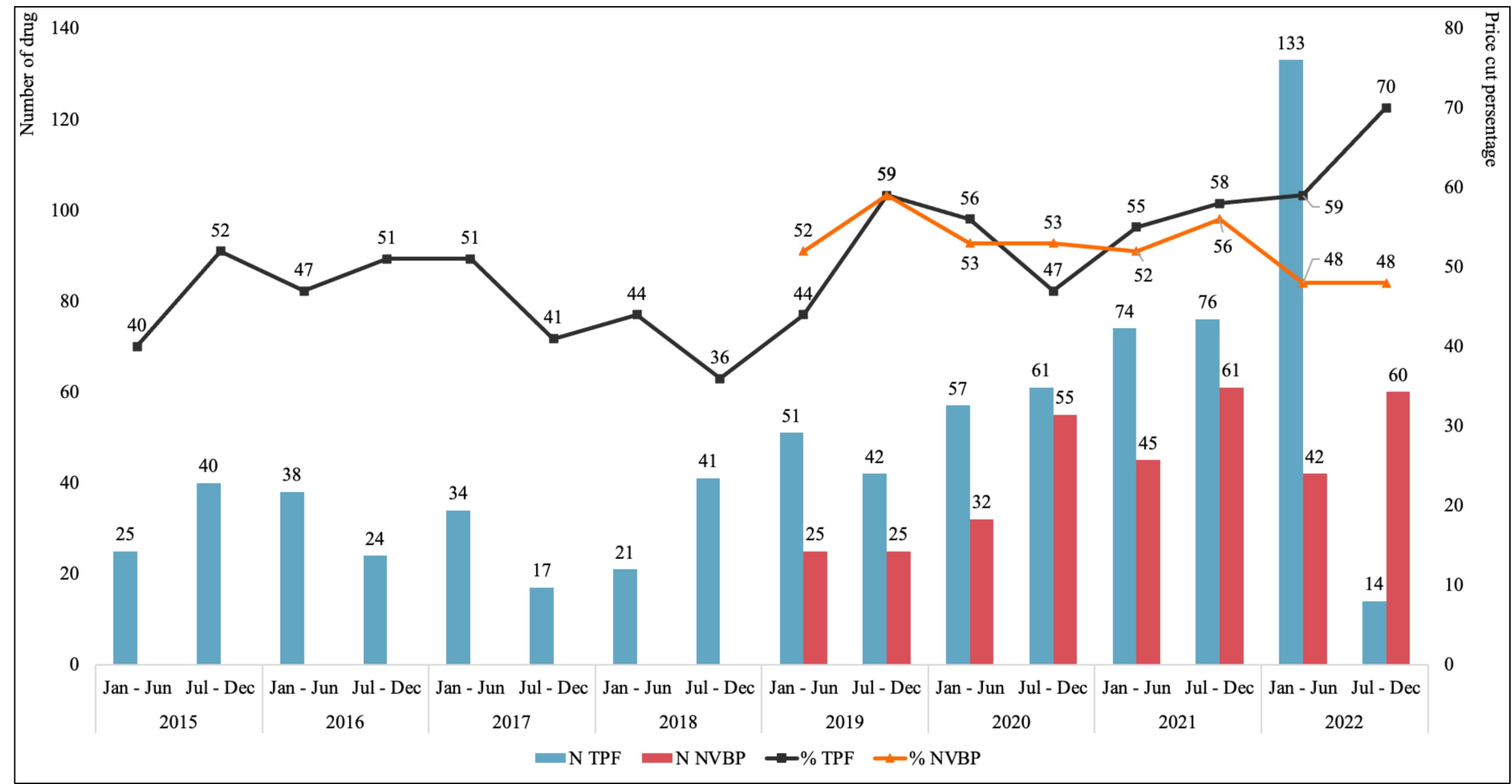
The pricing and procurement processes differ significantly between the TPF and NVBP. Under TPF, the price of a generic drug is determined by the price of the branded product and the number of existing manufacturers, whereas under NVBP, the government releases detailed information about procurement before the bidding process. Additionally, NVBP involves a transfer of purchasing power from decentralized medical institutions to a centralized organization, which may lead to some deficiencies, such as indirectly prohibiting the use of other products in public hospitals. However, in Canada's decentralized healthcare system, such a transfer of purchasing power is unlikely to occur. The regulation on procurement is well-established, and a balance between buyers and manufacturers, as well as federal and provincial/territorial governments, would be broken if the pCPA attempted to centralize purchasing power.

Outcomes

Both programs have achieved drug spending savings through pricing based on leveraging resources from all participants. The TPF program regulates that the price reduction should be between 15% and 75%, depending on the number of manufacturers, whereas the NVBP program does not have any specific regulations on the percentage of price reduction. The effectiveness of both programs is rather similar, with both programs achieving an average price reduction of approximately 53%. However, the efficiency of TPF is significantly higher than that of NVBP in recent years, possibly due to the fact that the drug list and order size for tendering are determined by various government sectors, which slows down the pricing process. Both programs have certain risks associated with them, and governments need to proceed with caution and consider the risks of emphasizing the reduction of drug prices without a long-term plan for balancing the interests of multiple stakeholders. The NVBP program has once disrupted the market and may lead to the monopolization of some pharmaceutical enterprises with strong production capacity, violating the program's original intention of achieving price reduction through competition.

		Tiered Pricing Framework	National Volume-Based Procurement
Structure (macro context, promoter, main parties involved, type of negotiated drugs)	Macro context	Federal state	Unitary country
	Promoter	Province/territory governments (upstream)	Central government (downstream)
	Main parties involved	Intergovernmental institutions, alliance, provincial/territory government, pharmaceutical industry	National departments, alliance, public medical institutions, pharmaceutical industry
	Type of priced drugs	Generic drug	Mainly for generic drug
	Health care system reform objectives	<ul style="list-style-type: none">• Pan-Canadian system of drug coverage• Structural reforms to improve efficiency	<ul style="list-style-type: none">• Value-based strategic purchasing• Increase health service price and improve medical worker’s compensation plan
Process (negotiation mechanism and procedure)	Program objectives	<ul style="list-style-type: none">• Lower the prices of generic drugs• Increase coverage and price consistency across public drug plans	<ul style="list-style-type: none">• Significant reduction in drug price and patients’ burden• Reduction in transaction cost• Improve the pharmaceutical industry ecology• Improve the drug using• Support the reform of public hospitals• Explore the bulk purchasing mechanism
	Pricing mechanism	Tiered price scheme	Tendering
	Beginning	Manufacturer submits application	Government releases procurement information
	Entry criteria	No	Generics Consistency Evaluation
Outcome (preliminary results)	Price cut limit	15% ~ 75%	0% ~ 100%
	Procurement	<ul style="list-style-type: none">• Pricing and procurement are not directly linked.• Overpriced generic drugs will be delisted from public drug plan formularies.	<ul style="list-style-type: none">• Pricing and procurement are directly linked.• Transferring the purchasing power from the separative medical institute to a centralized organization.
	Efficiency	748 kinds of generic drugs About 98 generic drugs per year	345 drugs in total About 86 drugs per year.
	Effective	53% in average (15% ~ 75%)	53% in average (0% ~ 98%)
	Savings	740 million CAD savings annually	17 billion CAD savings annually
	Other outcomes	<ul style="list-style-type: none">• Generic drug price consistency• Accelerates generic entry in small markets• Protects interests of opening-up-market manufacturer	<ul style="list-style-type: none">• Release patients’ financial burden• Motivated doctors to prescribe more affordable bidding winner drugs

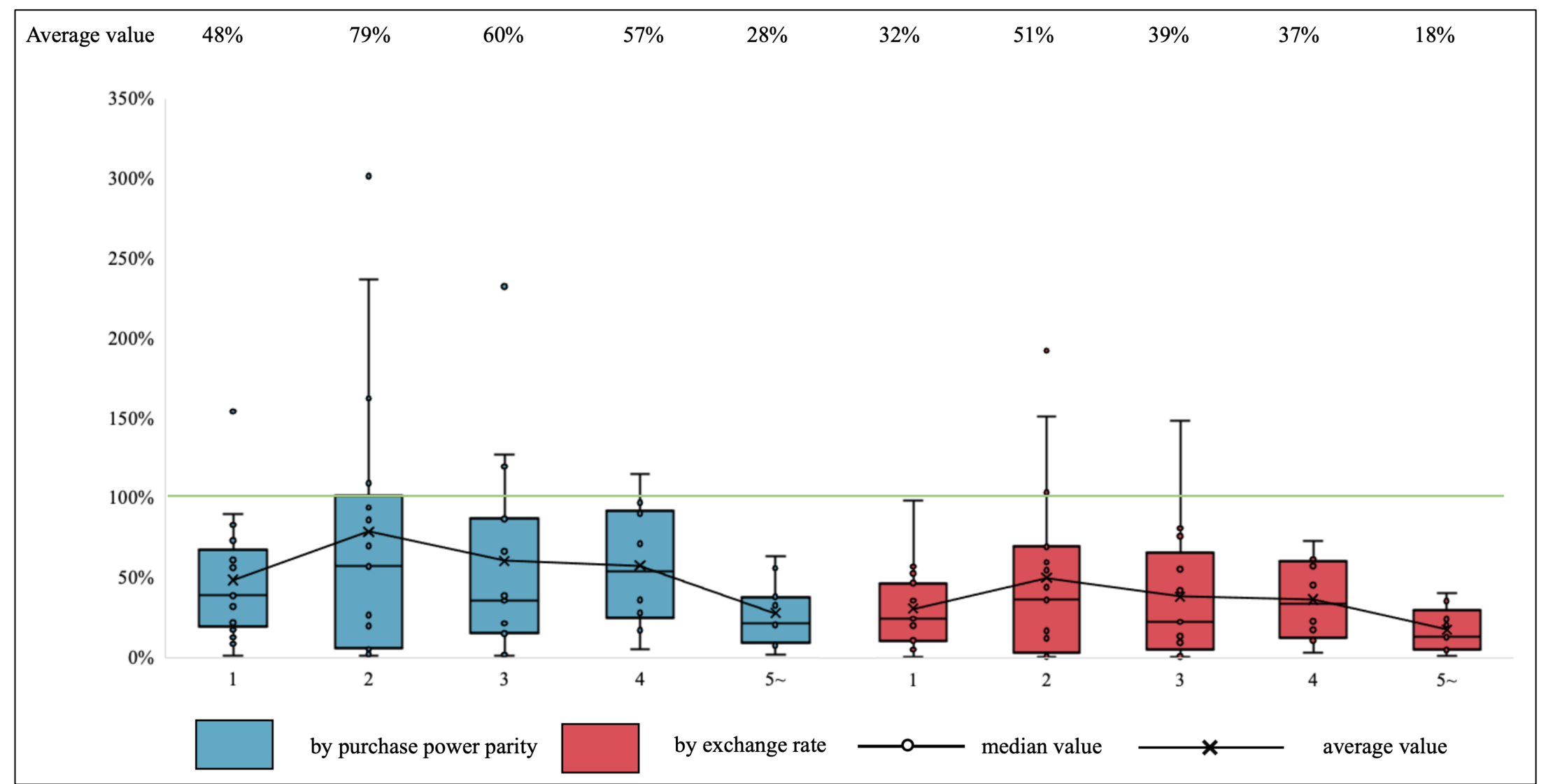
SUMMARY 1 Overview of TPF and NVBP under Donabedian’s SPO Model



SUMMARY 2 Overview of NVBP and TPF outcomes

OVERLAPPED DRUGS ANALYSIS

We compared the drug lists of NVBP and TPF and found 60 overlapping drugs as shown in Table 2. All price information was adjusted to the baseline year of 2021 using purchase power parity (PPP) and exchange rate data provided by the World. The prices under NVBP were 37.03% (exchange rate) and 53% (PPP) of their TPF counterparts. However, given that China’s adjusted net national income per capita is only about 20% of Canada’s in the most recent year, drug prices remain relatively expensive for the Chinese population, resulting in limited accessibility. Tablets had the lowest relative price, while tablets in extended-release form had the highest. We also found that the number of winning manufacturers under NVBP affected relative prices, with better results achieved when there was single or more than 4 winning manufacturers.



SUMMARY 3 Price comparison of overlapped drugs by winner manufacturer numbers of NVBP



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