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Impact of the MOH Cancer Drug List on out-of-pocket expenses and financial toxicity of patients undergoing chemotherapy

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Introduction

Costs of cancer has been rising in Singapore¹:
National spending on cancer drugs doubled from 2015 to 2019

Increased **financial burden** from higher out-of-pocket expenses (OOPE), and **financial distress** increases financial toxicity (FT)²

High FT is associated with **poorer quality of life** and **survival outcomes**³

The Cancer Drug List (CDL)⁴ was introduced on 1st September 2022:

- Only **CDL-listed medications** claimable via MSHL, MSV, IP
- Only **cost-effective medications** subsidised by SDL, MAF
- Allows negotiation for **lower cost prices**
- Reduces **treatment costs, insurance premiums**, and financial burden in the long run

MSHL: MediShield Life, MSV: Medisave, IP: Integrated Shield Plan, SDL: Standard Drug List Framework,⁵ MAF: Medication Assistance Fund Framework⁶

Materials and Methods

Cross-sectional study conducted at National Cancer Centre Singapore (NCCS)

Objectives	Data collection	Inclusion criteria	Data analysis
Impact on OOPE	Electronic database: • Chemotherapy bills from 1 st June – 30 th November 2022 • Bills finalised as of 12 th Feb 2024 • Demographic, clinical, financial data obtained	• Singapore citizens or Permanent Residents (PRs) • ≥18 years old • ≥1 cycle of chemotherapy per month in June – November 2022	Change in average OOPE: • Jun to Aug vs Sep to Nov 2022 • Increase in OOPE (average change in OOPE >\$0.00), or • No increase in OOPE (average change in OOPE ≤\$0.00)
Patient-reported FT	Patient survey: • Conducted between 23 rd May – 22 nd June 2023 Electronic database: • Demographic, clinical, financial data obtained	• Singapore citizens or PRs • ≥21 years old • Undergoing outpatient chemotherapy at NCCS • English/ Mandarin speaking • Written informed consent provided	1) Awareness and understanding of CDL • 5 true/false questions about CDL 2) Comprehensive Score for financial Toxicity (COST) tool ⁷ • Score of 0-44 • High FT: 0-21; Low FT: 22-44 ⁸ 3) Demographics

OOPE: Amount due after subsidies, MediShield and Medisave reimbursements, and 3rd party payments (IP, private or employer insurance, etc.)

Objectives

1. Assess CDL's **impact on OOPE** of patients undergoing outpatient chemotherapy
2. Assess **patient-reported FT** post-CDL implementation

Results and Discussion

Impact on OOPE

Cohort A
Number of participants with finalised bills: n=1674

- ≥65 years: 60.3%
- Female: 62.0%
- Chinese ethnicity: 84.0%
- Singapore citizens: 94.2%
- GI tumour: 22.0%
- Subsidised: 86.4%

1140 (68.1%) participants **did not have an increase in OOPE**

Median change in OOPE (IQR): \$0.00 (0.00 – 3.17)

310 (18.5%) had a decrease in OOPE

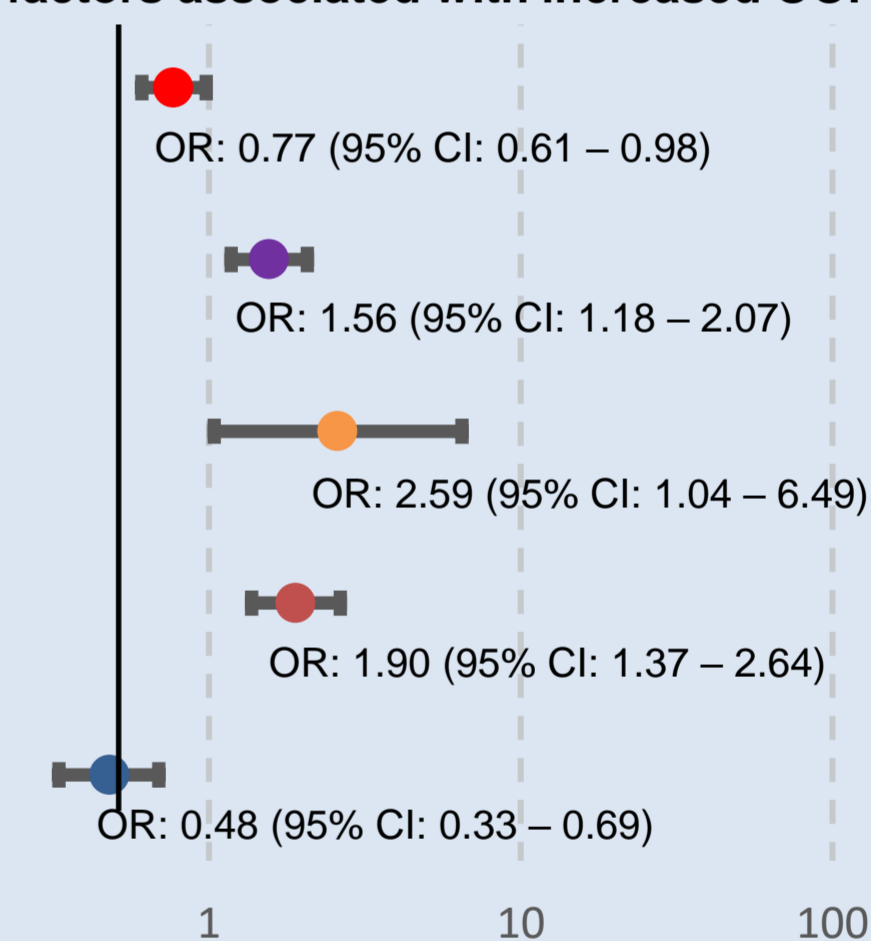
830 (49.5%) had no change in OOPE

Factors associated with increased OOPE

Factors ^a	Discussion
Difference in chemotherapy regimen after CDL • Difference (38.4%, Reference) • No difference (61.6%)	There was significant reductions in chemotherapy prices after CDL implementation ⁸ Participants with a difference in chemotherapy regimen less likely to enjoy price reductions
Use of any non-subsidised drugs • No (74.0%, Reference) • Yes (26.0%)	Non-subsidised drugs are not included in SDL or MAF Subsidy Frameworks ^{5,6} , increasing OOPE
Use of any drug not listed on CDL • All drugs on CDL (97.8%, Reference) • Not all drugs on CDL (2.2%)	Drugs not listed on CDL are not subsidised by SDL or MAF ^{5,6} , and do not receive reimbursements under the MSHL or MSV framework, increasing OOPE
Primary tumour site • Others (72.5%, Reference) • Gastrointestinal (GI) (27.5%)	GI cancer regimens typically use multiple conventional chemotherapy agents, with less reduction in prices and lower MSH/MSV limits after CDL implementation ^{4,8}
Subsidy status • Subsidised (91.6%, Reference) • Full-paying (7.9%) • Changed subsidy status ^b (0.6%)	Full-paying participants more likely to have IP or private insurance, with pre-CDL coverage extended ⁴ to April 2023 Insurance typically covers chemotherapy bills as-charged, decreasing OOPE

^a Percentages based on participants with increased OOPE. ^b Excluded from analysis

Fig 1. Forest plot of adjusted odds ratio of factors associated with increased OOPE



Patient-reported FT

Cohort B
Number of participants surveyed: n=107

- <65 years: 87.9%
- Female: 70.1%
- Chinese ethnicity: 72.9%
- Singapore citizens: 86.9%
- Married: 67.3%
- Subsidised: 76.6%

60.7% of participants reported **high FT**, of which 75.4% reported **no increase in OOPE**

High FT may be contributed by significant financial distress

Understanding of CDL

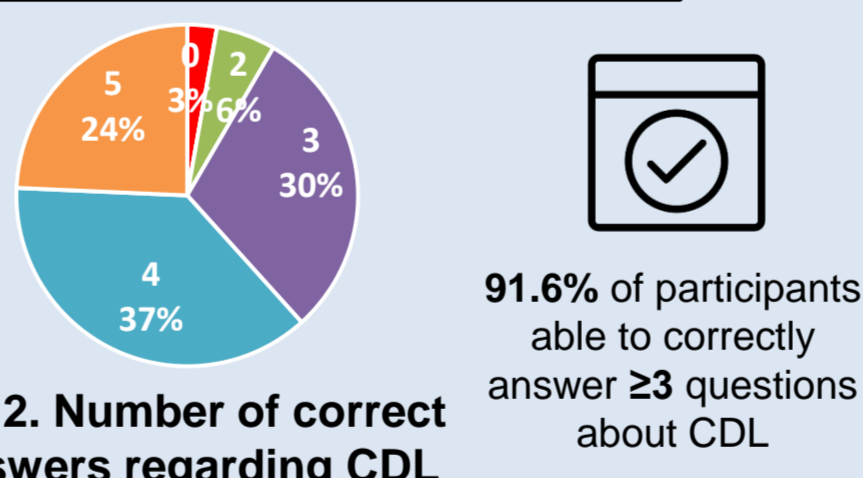


Fig 2. Number of correct answers regarding CDL

Qualitative comments about CDL

Fig 4. Common themes from comments about CDL

- 31.3 **Expand CDL coverage** "...include more drugs onto the list"
- 27.1 **Fear of unaffordability** "...worried that cannot afford treatment..."
- 25 **Insufficient awareness** "People are not widely informed about the CDL"
- 18.8 **Increase subsidies** "More subsidies should be given..."
- 18.8 **Lack of autonomy** "...no choice but to accept the CDL"
- 12.5 **Increase claim limits** "Increase the Medisave withdrawal cap..."

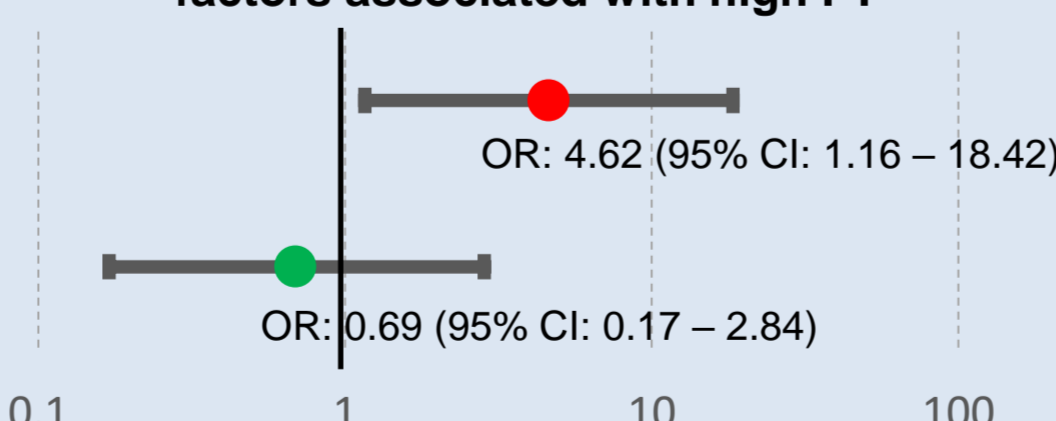
Other comments:
• Satisfaction with CDL and current bill coverage (6.3%)
• Changes in insurance coverage is unfair (4.2%)

Factors associated with high FT

Factors ^a	Discussion
Average monthly income • ≥\$2,000 (47.7%, Reference) • <\$2,000 (50.4%) • Prefer not to say ^b (1.9%)	Chemotherapy bills contribute a larger proportion of monthly expenses for patients who earn less
Employment status • Employed (56.1%, Reference) • Not working (43.9%)	Employed patients more likely to have higher monthly income and private/company insurance

^a Percentages based on participants with increased OOPE. ^b Excluded from analysis

Fig 3. Forest plot of adjusted odds ratio of factors associated with high FT



Limitations

- Does not reflect **IP or private insurance changes** after April 2023
 - More participants may switch to "subsidised" class
 - Lower insurance reimbursements may increase OOPE
- Limited sample size** of Cohort B
 - Unable to fully characterize factors associated with high FT
- Participants **had not received treatment bills** at the point of survey
 - COST scores may be higher due to distress from not knowing actual OOPE

Conclusion

- Most patients had **no increase in OOPE** following CDL implementation
- Financial distress remains a concern; **patient education and health literacy** may help alleviate distress
- This study identifies **potentially vulnerable patients** for targeted interventions (e.g. additional subsidy schemes, safety nets)

References

- 1 Medishield Life Council Report 2020 (2020).
- 2 Zafar SY, et al. (2013) Oncology (Williston Park). 27(2):80-1, 149.
- 3 Perrone F, et al. (2016) Ann Oncol. 27(12):2224-2229.
- 4 Ministry of Health. Cancer Drug List.
- 5 Ministry of Health. Standard Drug List (SDL) Subsidy Framework.
- 6 Ministry of Health. Medication Assistance Fund (MAF) Subsidy Framework. 7 de Souza JA, et al. (2017) Cancer.123(3):476-484.
- 8 Lee D, et al (2024) Proc of Singapore Healthcare. 33:1-11.