



CNSDose[®]

(Comprehensive+)

*Specialised pharmacogenetic
insights for mental health care*

**ONLY
AVAILABLE**
with
Australian
Clinical Labs



CNSDose®

(Comprehensive+)

- 174 medications across 19 genes and multiple therapeutic areas
- Enhanced guidance for antidepressants, antipsychotics, anxiolytics, ADHD and dementia medications, and other psychotropics
- User-friendly report developed by psychiatrists
- Actionable insights for a lifetime



CNSDose® is a pharmacogenetic (PGx) blood test and clinical decision support tool developed by Australian psychiatrists to enable more informed medication selection and dosing in mental health care. Unlike conventional pharmacogenetic tests that only analyse liver metabolic genetics, CNSDose was developed to analyse both liver and blood-brain barrier genetics. This approach identifies potential genetic barriers to psychotropic drug penetration, as well as the doses that ultimately reach the central nervous system and their targets, making CNSDose a uniquely informative tool.

What clinical evidence supports CNSDose?

- CNSDose was the first pharmacogenetic test to demonstrate positive outcomes in a randomised controlled trial for antidepressant treatment, with recovery rates of 72% in CNSDose guided prescribing compared to 28% with unguided prescribing.¹
- A 2017 study published in Pharmacogenetics and Genomics found that patients with major depressive disorder whose treatment was guided by CNSDose were 2.5 times more likely to achieve remission compared with unguided prescribing.²
- In a retrospective analysis of 1,100 CNSDose test results, 19% of patients with mental illness had normal liver metabolic genetics (e.g. CYP2D6 and CYP2C19), which would not assist clinicians in psychotropic medication selection. Of these patients, 40% had blood-brain barrier genetic variants affecting psychotropic medication transport into the brain, with significant implications for medication selection and dosing.

The CNSDose Report

The CNSDose Report was developed by Australian psychiatrists and covers 174 medications (see reverse). The user-friendly report includes:

PSYCHOTROPIC DOSE GUIDANCE:

Clear guidance on whether lower, average or higher doses may be required.

INTERNATIONAL CLINICAL RECOMMENDATIONS:

Bespoke annotations aligned with FDA (US Food and Drug Administration), CPIC (Clinical Pharmacogenomic Implementation Consortium) or DPWG (Dutch Pharmacogenomic Working Group) guidelines.

MEDICATION SAFETY ALERTS:

Highlights medications with significant drug-gene interactions where avoidance may be warranted.

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Incite Genomics
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Patient
Name: Test Patient
DOB: May 5, 1972
Identifier:
Physician: Dr Test Doctor
Clinic:
Good Practice

Report
Identifier: IG-2411-2013-3055-5010
Date: Nov 20, 2024
Sample Identifier: LP

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Medication Alerts
Test Patient has 16 medications with significant Gene-Drug Interactions, where avoidance may be warranted.

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Report Identifier: IG-2411-2013-3055-5010 / Patient: Test Patient / Date of Birth: May 5, 1972
Sample Identifier: LP / Lab: Incite Genomics / Director: Dr Keith Byeon / Accreditation number: 020574
1 // 27 INCITEGENOMICS.COM NOV 20, 2024

Clinical Labs PGx Test Comparison

Comprehensive PGx

- 8 genes analysed
- 97 medications covered
- Avoidance and cautionary recommendations in line with FDA, CPIC or DPWG guidelines
- Prescribing guidance for mental health, cardiology, oncology, pain management, gastroenterology and other clinical areas

CNSDose (Comprehensive+) PGx

- 19 genes analysed
- 174 medications covered
- Avoidance and cautionary recommendations in line with FDA, CPIC or DPWG guidelines
- Prescribing guidance for mental health, cardiology, oncology, pain management, gastroenterology and other clinical areas
- **Dose predictions (low, average, high) for psychotropic medications**

How to Order CNSDose® Pharmacogenetic (PGx) Testing

When to Order:

- Prior to commencing psychotropic therapy
- Following adverse reactions or treatment resistance

Request Form Instructions:

- Complete a standard Australian Clinical Labs request form and specify 'CNSDose' PGx testing. **Please note: CNSDose is only available through Australian Clinical Labs.**
- Please list any prescribed medications you would like included at the top of the report (only medications specified on the request form will be prioritised in this section).
- Electronic requesting available via Best Practice, MedicalDirector, Genie, Gentu and eResults.
- Patients can attend any Clinical Labs collection centre. For locations, visit clinicallabs.com.au/location.

Specimen Details:

- 2x EDTA blood samples

Turnaround Time:

- Results are available within 7-10 business days from sample receipt.
- Reports can be downloaded via eResults.

Test Cost:

- No Medicare rebate. Please visit clinicallabs.com.au/doctor/cnsdose for current pricing.
- Patients are required to pay upfront via our secure online portal at the time of collection. Assistance from our collector is available if required.
- Medibank members with eligible mental health cover may be able to self-claim a partial rebate.



For further information, including a sample report, case studies, pricing and educational resources, visit clinicallabs.com.au/doctor/cnsdose

References

1. Clinical Psychopharmacology and Neuroscience 2015;13:150–156
2. Pharmacogenetics and Genomics 2017;27:1–6



Assoc. Prof. Mirette Saad

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Australian Clinical Labs*

Lab: Clayton (Vic)

Speciality: Chemical Pathology

Areas Of Interest: Molecular genetics, precision medicine, cancer genetics, antenatal screening, NIPT, endocrine, fertility testing and research, medical teaching

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Associate Professor Mirette Saad is a Consultant Chemical Pathologist and the National Director of Molecular Genetics at Australian Clinical Labs. At Clinical Labs, A/Prof Mirette Saad leads the Molecular Genetic testing for non-invasive prenatal testing (NIPT), antenatal screening, personalised drug therapy and cancer. She is a Chair of the RCPA Chemical Pathology Advisory Committee, Member of the RCPA Genetic Advisory Committee, AACB and a Chair of the Precision Medicine Services at Clinical Labs.

174 Medications Covered by CNSDose

MEDICATION	GENE(S) INVOLVED
PSYCHOTROPICS (96)	
ANTI-ADHD	
Atomoxetine	CYP2D6
Clonidine	Multi-gene algorithm
Dextroamphetamine	Multi-gene algorithm
Guanfacine	Multi-gene algorithm
Lisdexamfetamine	Multi-gene algorithm
Methylphenidate	Multi-gene algorithm
Modafinil	Multi-gene algorithm
Viloxazine	CYP2D6
ANTI-DEMENTIA	
Donepezil	CYP2D6
ANTIDEPRESSANTS	
Agomelatine	Multi-gene algorithm
Amitriptyline	CYP2C19, CYP2D6
Bupropion	Multi-gene algorithm
Citalopram	CYP2C19
Clomipramine	CYP2C19, CYP2D6
Desipramine	CYP2C19, CYP2D6
Desvenlafaxine	Multi-gene algorithm
Dothiepin	Multi-gene algorithm
Doxepin	CYP2D6
Duloxetine	Multi-gene algorithm
Escitalopram	CYP2C19
Fluoxetine	Multi-gene algorithm
Fluvoxamine	CYP2D6
Imipramine	CYP2C19, CYP2D6
Levomilnacipran	Multi-gene algorithm
Mianserin	Multi-gene algorithm
Milnacipran	Multi-gene algorithm
Mirtazapine	Multi-gene algorithm
Moclobemide	Multi-gene algorithm
Nortriptyline	CYP2D6
Paroxetine	CYP2D6
Protriptyline	CYP2D6
Reboxetine	Multi-gene algorithm
Sertraline	CYP2C19, CYP2B6
Trazodone	Multi-gene algorithm
Trimipramine	CYP2C19, CYP2D6
Venlafaxine	CYP2D6
Vilazodone	Multi-gene algorithm
Vortioxetine	CYP2D6
ANTI-PSYCHOTICS	
Amisulpride	Multi-gene algorithm
Aripiprazole	CYP2D6
Asenapine	Multi-gene algorithm
Brexpiprazole	CYP2D6
Cariprazine	Multi-gene algorithm
Chlorpromazine	Multi-gene algorithm
Clozapine	Multi-gene algorithm
Haloperidol	CYP2D6
Iloperidone	CYP2D6
Lurasidone	Multi-gene algorithm

MEDICATION	GENE(S) INVOLVED
Olanzapine	Multi-gene algorithm
Paliperidone	Multi-gene algorithm
Perphenazine	CYP2D6
Pimozide	CYP2D6
Quetiapine	CYP3A4
Risperidone	CYP2D6
Thioridazine	CYP2C9
Ziprasidone	Multi-gene algorithm
Zuclopenthixol	CYP2D6
ANXIOLYTICS & HYPNOTICS	
Alprazolam	Multi-gene algorithm
Bromazepam	Multi-gene algorithm
Buspirone	Multi-gene algorithm
Clobazam	CYP2C19
Clonazepam	Multi-gene algorithm
Diazepam	CYP2C19
Diphenhydramine	Multi-gene algorithm
Flunitrazepam	Multi-gene algorithm
Melatonin	Multi-gene algorithm
Midazolam	Multi-gene algorithm
Nitrazepam	Multi-gene algorithm
Propranolol	CYP2D6
Suvorexant	Multi-gene algorithm
Temazepam	Multi-gene algorithm
Zolpidem	Multi-gene algorithm
Zopiclone	Multi-gene algorithm
MOOD STABILISERS / ANTICONVULSANTS	
Brivaracetam	CYP2C19
Carbamazepine	Multi-gene algorithm
Lamotrigine	Multi-gene algorithm
Oxcarbazepine	Multi-gene algorithm
Perampanel	Multi-gene algorithm
Phenytoin	CYP2C9
Rufinamide	Multi-gene algorithm
Topiramate	Multi-gene algorithm
Valproic Acid	Multi-gene algorithm
OTHER PSYCHOTROPICS	
Amphetamine	CYP2D6
Bromocriptine	Multi-gene algorithm
Cabergoline	Multi-gene algorithm
Dapoxetine	Multi-gene algorithm
Deutetrabenazine	CYP2D6
Disulfiram	Multi-gene algorithm
Galantamine	CYP2D6
Naloxone	Multi-gene algorithm
Naltrexone	Multi-gene algorithm
Nicotine	Multi-gene algorithm
Rasagiline	Multi-gene algorithm
Ropinirole	Multi-gene algorithm
Rotigotine	Multi-gene algorithm
Selegiline	Multi-gene algorithm

MEDICATION	GENE(S) INVOLVED
NON-PSYCHOTROPICS (78)	
ANTIARRHYTHMICS	
Flecainide	CYP2D6
Propafenone	CYP2D6
ANTICOAGULANTS	
Acenocoumarol	CYP2C9, VKORC1
Warfarin	CYP2C9, VKORC1
ANTIDIABETIC	
Nateglinide	CYP2C9
ANTIFUNGALS	
Flucytosine	DPYD
Voriconazole	CYP2C19
ANTI-NAUSEA	
Dronabinol	CYP2C9
Metoclopramide	CYP2D6
Ondansetron	CYP2D6
Tropisetron	CYP2D6
ANTIPLATELET	
Clopidogrel	CYP2C19
ANTIVIRALS	
Atazanavir	UGT1A1
Dolutegravir	UGT1A1
Efavirenz	CYP2B6
Raltegravir	UGT1A1
BETA BLOCKERS	
Carvedilol	CYP2D6
Metoprolol	CYP2D6
Nebivolol	CYP2D6
IMMUNOSUPPRESSANTS	
Azathioprine	TPMT, NUDT15
Tacrolimus	CYP3A5
NSAIDs	
Celecoxib	CYP2C9
Flurbiprofen	CYP2C9
Ibuprofen	CYP2C9
Lornoxicam	CYP2C9
Meloxicam	CYP2C9
Piroxicam	CYP2C9
Tenoxicam	CYP2C9
ONCOLOGY/ANTINEOPLASTIC	
Belinostat	UGT1A1
Belzutifan	CYP2C19
Capecitabine	DPYD
Erdafitinib	CYP2C9
Fluorouracil	DPYD
Gefitinib	CYP2D6
Irinotecan	UGT1A1
Mercaptopurine	TPMT, NUDT15
Nilotinib	UGT1A1
Sacituzumab Govitecan	UGT1A1

MEDICATION	GENE(S) INVOLVED
Tamoxifen	CYP2D6
Tegafur	DPYD
Thioguanine	TPMT, NUDT15
OPIOID ANALGESIC	
Codeine	CYP2D6
Hydrocodone	CYP2D6
Oliceridine	CYP2D6
Tramadol	CYP2D6
PROTON PUMP INHIBITORS	
Dexlansoprazole	CYP2C19
Esomeprazole	CYP2C19
Lansoprazole	CYP2C19
Omeprazole	CYP2C19
Pantoprazole	CYP2C19
Rabeprazole	CYP2C19
STATINS	
Atorvastatin	SLC01B1
Fluvastatin	CYP2C9, SLC01B1
Lovastatin	SLC01B1
Pitavastatin	SLC01B1
Pravastatin	SLC01B1
Rosuvastatin	SLC01B1, ABCG2
Simvastatin	SLC01B1
OTHERS	
Abrocitinib	CYP2C19
Allopurinol	ABCG2
Avatrombopag	CYP2C9
Carisoprodol	CYP2C19
Cevimeline	CYP2D6
Elagolix	SLC01B1
Eliglustat	CYP2D6
Fesoterodine	CYP2D6
Flibanserin	CYP2C19
Lofexidine	CYP2D6
Mavacamten	CYP2C19
Meclizine	CYP2D6
Mirabegron	CYP2D6
Pazopanib	UGT1A1
Pitolisant	CYP2D6
Siponimod	CYP2C9
Tamsulosin	CYP2D6
Tetrabenazine	CYP2D6
Toleterodine	CYP2D6
Valbenazine	CYP2D6