

What is Pharmacogenomic (PGx) testing and how can it benefit LTC communities?

PGx is a rapidly evolving science focused on how an individual's genes may affect his or her response to medications. While many patients may metabolize a medication appropriately, others may metabolize it too quickly, too slowly, or not well at all.

PGx testing identifies genetic variants that indicate potential drug-gene interactions – information providers can use to help guide clinical decision-making and ensure medications in the individual's treatment plan are providing optimal therapeutic benefit. It can also help avoid unwanted adverse events that may result from errant medication metabolism.

Why PGx Testing?

- PGx testing can reduce unnecessary medications
- PGx testing can reduce hospitalizations
- PGx testing can reduce unwanted adverse events



HealthDirect has partnered with a leading PGx provider, **AccessDx Laboratory**, to help facilitate access to precision medicine analysis via PGx for our partner communities.

When should I consider PGx testing for my community?

Per CMS, PGx tests are indicated when medications are being considered for use, or already being administered, that are medically necessary, appropriate, and approved for use in the patient's condition and are known to have a gene(s)-drug interaction that has been demonstrated to be clinically actionable as defined by the FDA or Clinical Pharmacogenetic Implementation Consortium (CPIC) guidelines category A and B. For additional information, see [FDA Table of Pharmacogenetic Associations](#) and [CPIC Guidelines](#).

Put another way, when medications are being prescribed with established potential for drug-gene interactions that can impact treatment success, PGx testing should be considered by clinical decision-makers to help guide therapy.

How do HealthDirect & AccessDx Laboratory deliver actionable PGx testing results?

Using validated gene-drug interaction data to create an individualized risk assessment, you will receive a comprehensive report for each patient detailing any anomalies to their genetic profile that may impact medications that are currently prescribed. Samples are obtained on site from a quick buccal swab.

AccessDx Laboratory analyzes a comprehensive set of genes based on the most recent evidenced-based data from internationally recognized PGx research organizations such as CPIC, the FDA, PharmGKB, and KNMP.

This drug-gene interaction panel provides analysis on over 200 medications across 16+ therapeutic areas, some examples are highlighted in the tables below, many of these medications are common therapies we see in everyday practice.

Pharmacogenomic Testing in LTC Facilities

October 2024

Antidepressants		Neurology		Cardiovascular	
Medication	Gene(s)	Medication	Gene(s)	Medication	Gene(s)
Amitriptyline (Elavil®)	CYP2D6, CYP2C19	Brivaracetam (Briviact®)	CYP2C19	Atorvastatin (Lipitor®)	SLCO1B1, CYP3A4
Bupropion (Wellbutrin®, Contrave®)	CYP2B6, ANKK1	Clobazam (Onfi®)	CYP2C19	Fluvastatin (Lescol®)	CYP2C9, SLCO1B1
Citalopram (Celexa®)	CYP2C19, SLC6A4, GRIK4, FKBP5, HTR2A	Diazepam (Valium)	CYP2C19	Lovastatin (Mevacor®, Advicor®)	CYP3A4, SLCO1B1
Clomipramine (Anafranil®)	CYP2D6, CYP2C19	Dronabinol (Marinol®)	CYP2C9	Pitavastatin (Livalo®)	SLCO1B1
Desvenlafaxine (Pristiq®)	CYP2D6	Lorazepam (Ativan®)	UGT2B15	Pravastatin (Pravachol®)	SLCO1B1
Doxepin (Silenor®)	CYP2D6, CYP2C19	Oxazepam (Serax®)	UGT2B15	Rosuvastatin (Crestor®)	SLCO1B1, ABCG2
Escitalopram (Lexapro®)	CYP2C19, SLC6A4	Phenobarbital (Luminal®)	CYP2C19	Simvastatin (Zocor®)	SLCO1B1, CYP3A4
Fluoxetine (Prozac®, Sarafem®)	CYP2D6	Phenytoin (Dilantin®)	CYP2C9	Carvedilol (Coreg®)	CYP2D6
Fluvoxamine (Luvox®)	CYP2D6, SLC6A4	Primidone (Mysoline®)	CYP2C19	Irbesartan (Avapro®)	CYP2C9
Imipramine (Tofranil®)	CYP2D6, CYP2C19	Zonisamide (Zonegran®)	CYP2C19	Losartan (Cozaar®, Hyzaar®)	CYP2C9
Nefazodone (Serzone®)	CYP2D6	Dextromethorphan / Quinidine (Nuedexta®)	CYP2D6	Metoprolol (Lopressor®)	CYP2D6
Nortriptyline (Pamelor®)	CYP2D6	Donepezil (Aricept®)	CYP2D6	Nebivolol (Bystolic®)	CYP2D6
Paroxetine (Paxil®, Brisdelle®)	CYP2D6	Galantamine (Razadyne®)	CYP2D6	Propranolol (Inderal®)	CYP2D6
Sertraline (Zoloft®)	CYP2C19	Deutetrabenazine (Austedo®)	CYP2D6	Timolol (Timoptic®)	CYP2D6
Venlafaxine (Effexor®)	CYP2D6	Tetrabenazine (Xenazine®)	CYP2D6	Clopidogrel (Plavix®)	CYP2C19
Vortioxetine (Trintellix®)	CYP2D6	Valbenazine (Ingrezza®)	CYP2D6	Ranolazine (Ranexa®)	CYP2D6
				Warfarin (Coumadin®)	CYP2C9, VKORC1, CYP4F2, CYP2C

* Not a complete list. For additional details on the medications and genotypes analyzed please contact your HealthDirect or AccessDx Laboratory representative.

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ADHD		Antipsychotics		Analgesics	
Medication	Gene(s)	Medication	Gene(s)	Medication	Gene(s)
Amphetamine (Adderall®, Evekeo®)	COMT, CYP2D6	Aripiprazole (Abilify®, Aristada®)	CYP2D6	Celecoxib (Celebrex®)	CYP2C9
Atomoxetine (Strattera®)	CYP2D6	Brexpiprazole (Rexulti®)	CYP2D6	Codeine (Codeine; Tussin AC®)	CYP2D6
Dexmethylphenidate (Focalin®)	COMT, ADRA2A	Chlorpromazine (Thorazine®)	CYP2D6	Fentanyl (Actiq®)	OPRM1
Dextroamphetamine (Dexedrine®)	COMT, CYP2D6	Clozapine (Clozaril®)	CYP1A2, CYP2D6, HTR2C	Hydrocodone (Vicodin®)	CYP2D6, OPRM1
Lisdexamfetamine (Vyvanse®)	COMT, CYP2D6	Haloperidol (Haldol®)	CYP2D6	Ibuprofen (Advil®, Motrin®)	CYP2C9
Methylphenidate (Ritalin®, Concerta®)	COMT, ADRA2A	Iloperidone (Fanapt®)	CYP2D6	Meloxicam (Mobic®)	CYP2C9
Proton Pump Inhibitor (PPI)		Olanzapine (Zyprexa®)	CYP1A2, HTR2C	Methadone (Dolophine®)	CYP2B6
Medication	Gene(s)	Paliperidone (Invega®)	CYP2D6	Morphine (MS Contin®)	OPRM1, COMT
Dexlansoprazole (Dexilant®, Kapidex®)	CYP2C19	Perphenazine (Trilafon®)	CYP2D6	Oxycodone (Percocet®, Oxycontin®)	CYP2D6
Esomeprazole (Nexium®)	CYP2C19	Risperidone (Risperdal®)	CYP2D6, HTR2C, DRD2	Piroxicam (Feldene®)	CYP2C9
Lansoprazole (Prevacid®)	CYP2C19	Thioridazine (Mellaril®)	CYP2D6	Tramadol (Ultram®)	CYP2D6
Omeprazole (Prilosec®)	CYP2C19	Central Nervous System		Urology	
Pantoprazole (Protonix®)	CYP2C19	Medication	Gene(s)	Medication	Gene(s)
Rabeprazole (Aciphex®)	CYP2C19	Meclizine (Antivert®)	CYP2D6	Fesoterodine (Toviaz®)	CYP2D6
		Metoclopramide (Reglan®)	CYP2D6	Mirabegron (Myrbetriq®)	CYP2D6
		Naltrexone (Vivitrol®, Contrave®)	OPRM1	Tamsulosin (Flomax®)	CYP2D6
		Ondansetron (Zofran®, Zuplenz®)	CYP2D6, ABCB1, SLC6A4	Tolterodine (Detrol®)	CYP2D6
				Torsemide (Demadex®)	CYP2C9

* Not a complete list. For additional details on the medications and genotypes analyzed please contact your HealthDirect or AccessDx Laboratory representative.

How to access pharmacogenomic (PGx) testing for your community

- Ask your **HealthDirect** representative for more information on PGx opportunities and next steps. **HealthDirect** will coordinate with **AccessDx Laboratory** to run a free risk assessment report for your community.
- Following a review of your community's risk assessment results, an **AccessDx Laboratory** representative will schedule a time to collect the buccal swab specimens from your residents.
- Comprehensive PGx analysis results for tested residents will be received within a week of laboratory receipt and will be reviewed with any clinical staff that wish to be involved.

What is the cost of this service to my residents and community?

PGx testing is covered by Medicare and other major payors when medically necessary. PGx testing is also covered by most commercial insurance providers with a copay. **HealthDirect** has secured a discounted rate of \$249 for any uninsured individuals that have a medical need for PGx testing. Contact your **HealthDirect** or **AccessDx Laboratory** representative for any questions on coverage determination.



AccessDx Laboratory delivers evidence-based and best-in-class advanced molecular diagnostic testing solutions to enable precision medicine programs nationwide. With the expertise of our multidisciplinary team of senior care and precision medicine experts and best-in-class partners like HealthDirect, AccessDx seamlessly integrates personalized diagnostics, evidence-based medicine, risk mitigation tools, and EHR-based clinical decision support to reduce readmissions, ED visits, falls, and polypharmacy.

www.accessdxlab.com

connect@accessdxlab.com