MCP SERVER | NO CODE | CLOUD HOSTED

eGFR Calculator MCP for AI Agents

Accurate Kidney Function Staging Using Multiple eGFR Formulas

The eGFR Calculator MCP estimates Glomerular Filtration Rate using clinically validated formulas for kidney function assessment. It processes patient metrics, providing the estimated GFR value through methods like CKD-EPI 2021 or MDRD. Critically, it goes beyond just a number by determining the KDIGO Chronic Kidney Disease (CKD) stage and suggesting specific medication dosage adjustments based on the resulting renal function.

A+ Quality Score 100/100

egfr | ckd-epi | mdrd | kidney-function | nephrology | clinical-aid

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vinkius.com/mcp/egfr-calculator

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

eGFR Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Estimating kidney health requires more than just running one formula; you need context. This MCP handles that complexity automatically. You feed in basic patient metrics, like age, sex, and serum creatinine levels, and your AI client returns a full clinical picture of renal function. It doesn't stop at the raw eGFR number either. After calculating the rate, it immediately determines the specific KDIGO CKD stage (G1 through G5). Furthermore, it uses that staging to recommend appropriate medication dosage changes—a critical step in patient care. Connecting this MCP via Vinkius gives your AI agent instant access to multiple standards and clinical guidelines, letting you move from raw data input straight to actionable medical advice without manual cross-referencing or jumping between different reference tools.

Core Capabilities

01 — Determine eGFR using modern CKD-EPI 2021 formula

Calculates the estimated Glomerular Filtration Rate (eGFR) using the current gold standard formula, eliminating race-based adjustments.

02 — Calculate eGFR using traditional MDRD method

Estimates GFR by running calculations based on the established MDRD medical formula.

03 — Classify CKD stage and dosage requirements

Assigns a specific KDIGO Chronic Kidney Disease stage (G1 to G5) and provides recommended adjustments for medication dosing based on the patient's current kidney function.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/egfr-calculator** — connect your AI agent in three steps.

01 Your AI client gathers necessary patient data, including age, sex, and serum creatinine levels.

02 It executes the eGFR calculation using either the CKD-EPI 2021 formula or the MDRD method to obtain a primary GFR value.

03 The system then takes that calculated eGFR value and runs it through clinical staging logic, returning both the KDIGO stage grade and specific medication dosage advice.

The bottom line is, you get an instant, multi-layered report that combines raw numerical data with immediate clinical interpretation for patient care.

Built For

This MCP targets clinicians and specialists who deal with chronic kidney disease (CKD) management. It's essential for primary care physicians, internal medicine specialists, and clinical pharmacists who spend time calculating renal function metrics and adjusting drug dosages based on patient status.

Primary Care Physician

Uses the eGFR Calculator to quickly assess a new patient's kidney health when they present with elevated creatinine, ensuring initial staging is correct for follow-up care.

Internal Medicine Specialist

Relies on this MCP to compare multiple formulas (CKD-EPI 2021 vs. MDRD) and get a clinical stage classification before prescribing complex medication regimens.

Clinical Pharmacist

Uses the eGFR Calculator's dosing advice feature to confirm if a standard drug dosage needs immediate adjustment due to documented renal impairment, preventing potential overdose or under-treatment.

What Changes When You Connect

01 Avoids formula bias: By running both the modern CKD-EPI 2021 and traditional MDRD calculations, you get a comprehensive view of kidney function estimates.

02 Direct clinical staging: The MCP doesn't just give a number; it uses the eGFR value to classify the patient into the official KDIGO stage (G1 through G5).

03 Immediate dosing guidance: It provides specific medication dosage adjustment recommendations, saving time and improving safety during prescribing decisions.

04 Saves manual comparison: You eliminate the need to cross-reference multiple clinical guidelines; one call generates both the rate and the staging advice.

05 Reliability in diagnostics: The ability to compare results from different formulas helps confirm the most accurate assessment of renal impairment.

Real-World Applications

Initial patient intake for CKD screening

A PCP enters a new patient's basic bloodwork. The agent uses the eGFR Calculator to run both `calculate_ckdepi_2021` and `calculate_mdrd_formula`. It then uses `get_clinical_classification` to determine if the patient is Stage G2, immediately flagging them for follow-up testing.

Checking medication safety before prescription

A pharmacist needs to confirm dosing for a specific antibiotic. The agent first calculates eGFR using `calculate_ckdepi_2021` with the patient's current data, and then uses that result in `get_clinical_classification` to ensure the recommended dose is safe.

Comparing multiple renal function metrics

A resident needs to compare a patient's kidney status against historical records. The agent runs both eGFR calculations, allowing them to see how the rate has changed relative to previous measurements and determine if the KDIGO stage warrants an intervention.

Patterns to Avoid

Only relying on a single formula

✗ AVOID

Manually calculating eGFR using only one standard, missing potential discrepancies between formulas, leading to incorrect staging and dosing advice.

✓ INSTEAD

Use the eGFR Calculator MCP to run both `calculate_ckdepi_2021` and `calculate_mdrd_formula`, then use `get_clinical_classification` on those results. This cross-validation ensures a comprehensive clinical assessment.

Ignoring the clinical stage

✗ AVOID

Getting an eGFR number like 45 mL/min/1.73m² and stopping there, failing to realize that this single number requires specific medication dose adjustments.

✓ INSTEAD

After calculating the rate, always run `get_clinical_classification`. This tool translates the raw data into actionable advice, telling you exactly what stage the patient is in and how to adjust medications.

Misinterpreting GFR units

✗ AVOID

Confusing a number like 45 with the actual clinical meaning of 'Stage G3a' or failing to recognize that eGFR changes mean more than just a drop in numbers.

✓ INSTEAD

Let the eGFR Calculator MCP handle this. Its `get_clinical_classification` tool interprets the resulting rate and gives you the correct KDIGO stage, which is easier to communicate clinically.

The Right Fit

Use this MCP if your workflow requires more than just a single GFR number. You need comparative metrics, specifically comparing results from established formulas like CKD-EPI 2021 and MDRD. This is critical when differentiating between initial screening and advanced chronic care management. Don't use it if you only need one specific calculation; the value here comes from running multiple calculations and then feeding those results into `get_clinical_classification` to get the full clinical picture. If your goal is simply data retrieval without staging or dosing advice, a basic calculator might suffice. But for any patient assessment that requires determining KDIGO status or adjusting medication doses, this MCP is necessary.

eGFR Calculator: Managing CKD Staging with Advanced Kidney Function Tools

Right now, assessing kidney function can feel like a puzzle. You have to manually run patient data through different formulas—the modern one, the traditional one—and then you have to take that raw number and cross-reference it with staging guidelines (G1-G5) before finally checking drug formularies for appropriate dose adjustments. It's slow, and missing one step means risking an incorrect diagnosis or medication error.

With this MCP, your agent handles the entire chain in seconds. You provide the base data, and it instantly runs multiple eGFR calculations and then uses those results to determine both the precise KDIGO stage and specific dosage advice. What you get is a single, clinically comprehensive report ready for patient action.

eGFR Calculator: Ensuring Drug Safety Through Renal Function Classification

The most tedious part of nephrology care is the constant checking: 'Wait, was this drug dose adjusted for renal function?' You're constantly looking at a number and having to interpret what it means in terms of patient safety and dosing protocols.

This MCP solves that. Instead of just giving you an eGFR value, the `get_clinical_classification` tool translates that number into concrete clinical advice, telling you exactly which KDIGO stage the patient is in and recommending dosage adjustments immediately. It makes prescribing safer.

eGFR Calculator: 3 Tools for Advanced Kidney Function Testing

These tools allow you to calculate estimated Glomerular Filtration Rate using multiple medical formulas and determine the clinical stage of chronic kidney disease.

#	TOOL	DESCRIPTION
01	`calculate_ckdepi_2021`	Calculates estimated GFR using the modern CKD-EPI 2021 formula, which does not include race adjustments.
02	`calculate_mdrd_formula`	Estimates GFR by running calculations based on the traditional MDRD medical formula.
03	`get_clinical_classification`	Determines the patient's KDIGO Chronic Kidney Disease stage (G1–G5) and suggests appropriate changes to medication dosing.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U What's the CKD staging for a 55-year-old male with a creatinine of 1.4 mg/dL?

eGFR Assessment Report

- **CKD-EPI 2021:** 78 mL/min/1.73m²
- **MDRD Formula:** 65 mL/min/1.73m²

Clinical Classification (KDIGO): Stage G2 (Mildly Decreased)

Action: Monitor closely. Dosage adjustments are generally not necessary at this rate, but follow-up bloodwork in three months is recommended.

U Run both eGFR calculations for a 72-year-old female with creatinine of 2.1 mg/dL.

Here are the estimated GFR results:

FORMULA	ESTIMATED GFR (ML/MIN/1.73M²)
CKD-EPI 2021	45
MDRD	38

Observation: Both formulas suggest moderate renal impairment. The next step is to check the clinical guidelines for stage and dosing.

U If eGFR is 15, what's the KDIGO stage and drug advice?

KDIGO Stage Determination

- **Stage:** G4 (Severe Decrease)
- **Clinical Interpretation:** Significant reduction in kidney function. Patient requires immediate attention.
- **Medication Dosing Advice:** For drugs X, Y, or Z, reduce the standard dose by 50% and check for alternative agents.

Frequently Asked Questions

01 **How can I use the eGFR Calculator MCP to determine a patient's CKD stage?**

The eGFR Calculator handles this automatically. After calculating the rate using either formula, it assigns a specific KDIGO Stage (G1–G5). This helps you know if the condition is mild or requires urgent intervention.

02 **Do I need to use both formulas when assessing kidney function with eGFR Calculator?**

It's best practice to compare them. The MCP lets you run multiple calculations, allowing you to see discrepancies between the CKD-EPI 2021 and MDRD results for a more complete picture.

03 **What does the eGFR Calculator tell me about drug doses?**

It provides specific medication dosage adjustment recommendations based on the calculated stage. This is crucial because many drugs must have their dose lowered when kidney function declines to prevent toxicity.

04 **Is this MCP better than just using a standard online eGFR tool?**

Yes, because it's not limited to one formula or outcome. It compares multiple recognized standards and provides immediate clinical context—the staging and dosing advice—all in one place.

05 **How do I start using the eGFR Calculator MCP with my AI client?**

Simply provide your patient's core metrics, like age, sex, and serum creatinine. The agent will then handle all the complex calculations and classifications for you.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"egfr-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

eGFR Calculator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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