Digoxin

SPS Monitoring Guidance (2023) | NICE NG106 | BNF | Br J Cardiol 2024

NARROW INDEX: Toxicity Can Occur Within Range

- ☐ Toxicity usually develops gradually from accumulation rather than overdose.
- ☐ Serum digoxin level is NOT checked routinely. Digoxin levels should not be interpreted in isolation: toxicity can occur at concentrations within the accepted range, particularly in older patients, renal impairment, or when potassium is low.
- ☐ Blood sample must be taken 6-12 hours after the last dose. Earlier samples give falsely high results.
- ☐ Low potassium greatly increases the risk of digoxin toxicity, even at an apparently normal level.

INTERACTIONS: Check at Every Dispense

- ☐ Amiodarone: can substantially increase digoxin concentrations. Confirm the prescriber has reviewed the digoxin dose and monitoring plan before dispensing.
- ☐ Verapamil and diltiazem: raise digoxin levels AND cause additive bradycardia. Monitor closely if either is newly prescribed.
- ☐ Loop and thiazide diuretics: cause hypokalaemia, significantly increasing toxicity risk. Check potassium regularly in any patient on both digoxin and a diuretic.
- ☐ Spironolactone: raises digoxin levels. Monitor for toxicity if dose is changed.
- ☐ Macrolides (clarithromycin, erythromycin): may increase digoxin concentrations. Counsel on toxicity symptoms; consider prescriber review if symptoms develop.
- ☐ St John's Wort: reduces digoxin levels through P-glycoprotein induction. Check for herbal medicines and supplements.

Monitoring Schedule (SPS/BNF)

Test	When	Notes
U&E, potassium, creatinine	At least annually	More frequent if elderly, renal impairment, or diuretic use
Calcium	Baseline, then annually	Hypercalcaemia increases toxicity risk
Magnesium	When clinically indicated (especially long-term PPI use, unexplained arrhythmias, or suspected deficiency)	
Thyroid function	Baseline, then annually	Hypothyroidism increases sensitivity; hyperthyroidism causes resistance
Serum digoxin level	Not routine (see indications above)	Sample 6-12 hours post-dose only

REPEAT DISPENSE CHECKS

- ☐ Ask: "Have you noticed nausea, loss of appetite, vomiting, or changes in your vision, particularly blurring or yellow/green halos?"
- ☐ Ask: "Has your heart felt very slow, or have you started any new medicines?"
- ☐ Check whether renal function has been tested recently. Worsening renal function can increase digoxin concentrations.

RED FLAGS: Act Immediately

- ☐ Nausea, loss of appetite, vomiting, or diarrhoea with bradycardia or irregular pulse: possible toxicity. Withhold digoxin and seek urgent assessment.
- ☐ Visual disturbances: blurred vision, yellow or green halos. Seek urgent assessment.
- ☐ Confusion, drowsiness, or collapse: possible severe toxicity. Call 999.
- ☐ Marked bradycardia, new dizziness, syncope, or pulse significantly lower than usual: withhold digoxin and contact the prescriber urgently.
- ☐ New amiodarone, verapamil, diltiazem, or macrolide, or significant renal deterioration: confirm prescriber review before next supply.

Key reminders: Toxicity most often arises from declining renal function or hypokalaemia, not overdose. The "reverse-tick" ECG appearance is a normal digoxin effect, not a sign of toxicity. Never stop digoxin abruptly without prescriber advice.

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