EHR Support for KISQALI Treatment Monitoring

OncoEMR®

Maintaining up-to-date protocols in EHRs is an integral part of providing comprehensive, consistent care. OncoEMR may be able to support your EHR support or information technology department with developing, configuring, and modifying EHR components relevant to treatment with KISQALI, such as creating "Alerts" that will help health care professionals identify patients who need ECG and laboratory workup and monitoring once prescribed KISQALI.

- If you would like to **set up an Alert for KISQALI**, submit a request to OESupport@flatiron.com
- For more detail on **ECG monitoring, lab monitoring and dosing** for KISQALI, see the following pages (the navigation tabs at the top of each page can also be used to easily navigate between information)
- For more information on **how the Novartis HIT Team can collaborate with your organization** to identify shared priorities please email: [HIT.Novartis@novartis.com]

ECG=electrocardiogram; EHR=Electronic Health Record.

Indications

KISQALI is indicated for the treatment of adult patients with hormone receptor (HR)-positive, human epidermal growth factor receptor 2 (HER2)-negative advanced or metastatic breast cancer in combination with:

- an aromatase inhibitor as initial endocrine-based therapy; or
- fulvestrant as initial endocrine-based therapy or following disease progression on endocrine therapy in postmenopausal women or in men.

IMPORTANT SAFETY INFORMATION

QT interval prolongation. KISQALI has been shown to prolong the QT interval in a concentration-dependent manner. Based on the observed QT prolongation during treatment, KISQALI may require dose interruption, reduction, or discontinuation. Across KISQALI treatment groups, 15 of 1054 patients (1.4%) had >500 ms postbaseline QTcF value, and 61 of 1054 (6%) had a >60 ms increase from baseline in QTcF intervals. These electrocardiogram (ECG) changes were reversible with dose interruption and most occurred within the first 4 weeks of treatment. No cases of torsades de pointes were reported.
In MONALEESA-2, on the KISQALI + letrozole treatment arm, there was 1 (0.3%) sudden death in a patient with grade 3 hypokalemia and grade 2 QT prolongation. No cases of sudden death were reported in MONALEESA-7 or MONALEESA-3.

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Upfront ECG Monitoring

ECG and QTcF Prolongation Overview

- **ECG** measures electrical impulses as 5 waves using the letters P, Q, R, S, and T.[1]
- **QT interval** is the space between the start of the Q wave and end of the T wave, characterizing the electrical depolarization and repolarization of the heart's ventricles.[1,2]
- **QTc** is a QT interval measurement corrected to compare QT intervals at different heart rates.[2]
- **QTcF** is a QT interval corrected using the Fridericia formula.[3]
- **Prolongation of the QTc interval** is a risk factor of developing torsades de pointes or other clinically significant arrhythmias.[4]
- **Risk factors for QT interval prolongation** include medications with risk of lengthening the QT interval, 4 electrolyte imbalances (hypokalemia, hypomagnesemia, hypophosphatemia, and hypocalcemia), age, sex, bradycardia, and family/personal medical history.[4-6]

KISQALI QTcF Prolongation Incidence[3]

Low incidence of QT prolongation across all KISQALI clinical trials, and most cases were moderate in nature

In a pooled analysis across 3 phase III trials of 1054 premenopausal and postmenopausal patients treated with KISQALI + an AI or fulvestrant:

1% had a >500 ms post baseline QTcF value

6% experienced a >60 ms increase from baseline in QTcF interval

- There were no reported cases of torsades de pointes

ECG changes were reversible with dose interruption and the majority occurred within the first 4 weeks of treatment.

AI=aromatase inhibitor.

IMPORTANT SAFETY INFORMATION (continued)

QT interval prolongation (continued). Assess ECG prior to initiation of treatment. Initiate treatment with KISQALI only in patients with QTcF values <450 ms. Repeat ECG at approximately Day 14 of the first cycle, at the beginning of the second cycle, and as clinically indicated. Monitor serum electrolytes (including potassium, calcium, phosphorus, and magnesium) prior to the initiation of treatment, at the beginning of each of the first 6 cycles, and as clinically indicated. Correct any abnormality before starting therapy with KISQALI.

Avoid the use of KISQALI in patients who already have or who are at significant risk of developing QT prolongation, including patients with:

- long QT syndrome
- uncontrolled or significant cardiac disease including recent myocardial infarction, congestive heart failure, unstable angina, and bradyarrhythmias
- electrolyte abnormalities

Avoid using KISQALI with drugs known to prolong the QT interval and/or strong CYP3A inhibitors, as this may lead to prolongation of the QTcF interval.

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Upfront ECG Monitoring (continued)[3]

ECG Monitoring		
Baseline		✓
Cycle 1	Day 14	✓
Cycle 2	Day 1	✓ (final scheduled)

- KISQALI should only be initiated in patients with QTcF <450 ms. In case of QTcF prolongation during therapy, more frequent monitoring is recommended
- Any additional monitoring should be performed as clinically indicated
- Monitoring requirements based on a 28-day treatment cycle

Only 3 ECGs are required—and all are completed within the first 30 days of treatment.

IMPORTANT SAFETY INFORMATION (continued)

Interstitial lung disease/pneumonitis. Severe, life-threatening, or fatal interstitial lung disease (ILD) and/or pneumonitis can occur in patients treated with KISQALI and other CDK4/6 inhibitors.

Across clinical trials in patients with advanced or metastatic breast cancer treated with KISQALI in combination with an aromatase inhibitor or fulvestrant ("KISQALI treatment groups"), 1.6% of patients treated with KISQALI had ILD/pneumonitis of any grade, 0.4% had grade 3/4, and 0.1% had a fatal outcome. Additional cases of ILD/pneumonitis have been observed in the postmarketing setting, with fatalities reported.

Monitor patients for pulmonary symptoms indicative of ILD/pneumonitis, which may include hypoxia, cough, and dyspnea. In patients who have new or worsening respiratory symptoms suspected to be due to ILD or pneumonitis, interrupt treatment with KISQALI immediately and evaluate the patient. Permanently discontinue treatment with KISQALI in patients with recurrent symptomatic or severe ILD/pneumonitis.

Severe cutaneous adverse reactions. Severe cutaneous adverse reactions (SCARs), including Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), and drug-induced hypersensitivity syndrome (DiHS)/drug reaction with eosinophilia and systemic symptoms (DRESS) can occur in patients treated with KISQALI.

If signs or symptoms of SCARs occur, interrupt KISQALI until the etiology of the reaction has been determined. Consultation with a dermatologist is recommended.

If SJS, TEN, or DiHS/DRESS is confirmed, permanently discontinue KISQALI. Do not reintroduce KISQALI in patients who have experienced SCARs or other life-threatening cutaneous reactions during KISQALI treatment.

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Routine Laboratory Monitoring[3]

		CBC/LFT	Electrolytes
Baseline		✓	✓
Cycle 1	Day 14	✓	
Cycle 2	Day 1	✓	✓
	Day 14	✓	
Cycle 3-6	Day 1	✓	✓

- For LFTs, if grade ≥2 abnormalities are noted, more frequent monitoring is recommended
- Correct any electrolyte abnormalities prior to treatment
- Additional monitoring may be required as clinically indicated
- Monitoring requirements based on a 28-day treatment cycle

The majority of scheduled monitoring occurs within the first 2 cycles of therapy and there is no scheduled monitoring beyond Cycle 6.

CBC=complete blood count; LFT=liver function test.

IMPORTANT SAFETY INFORMATION (continued)

Increased QT prolongation with concomitant use of tamoxifen. KISQALI is not indicated for concomitant use with tamoxifen. In MONALEESA-7, the observed mean QTcF increase from baseline was ≥10 ms higher in the tamoxifen + placebo subgroup compared with the non-steroidal aromatase inhibitor (NSAI) + placebo subgroup. In the placebo arm, an increase of >60 ms from baseline occurred in 6/90 (7%) of patients receiving tamoxifen, and in no patients receiving an NSAI. An increase of >60 ms from baseline in the QTcF interval was observed in 14/87 (16%) of patients in the KISQALI and tamoxifen combination and in 18/245 (7%) of patients receiving KISQALI plus an NSAI.

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Monitoring Summary[3]

		Upfront ECG Monitoring	Routine Laboratory Monitoring	
		ECG Monitoring	CBC/LFT	Electrolytes
Baseline		✓	✓	✓
Cycle 1	Day 14	✓	✓	
Cycle 2	Day 1	✓	✓	✓
	Day 14		✓	
Cycle 3-6	Day 1		✓	✓

LAB The majority of scheduled monitoring occurs **within the first 2 cycles of therapy** and there is **no scheduled monitoring beyond Cycle 6**.

ECG **Only 3 ECGs are required**—and all are completed within the **first 30 days of treatment**.

IMPORTANT SAFETY INFORMATION (continued)

Hepatobiliary toxicity. Across KISQALI treatment groups, increases in transaminases were observed. Across all trials, grade 3/4 increases in alanine aminotransferase (ALT) (11% vs 2.1%) and aspartate aminotransferase (AST) (8% vs 2%) were reported in the KISQALI and placebo arms, respectively.

Among the patients who had grade ≥3 ALT/AST elevation, the median time to onset was 92 days and median time to resolution to grade ≤2 was 21 days for the KISQALI treatment groups.

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Dosing[3]

KISQALI—the only CDK4/6 inhibitor that offers one tablet strength for simple dose reductions

Recommended starting dose	1st reduction	2nd reduction
3 tablets (600 mg)	2 tablets (400 mg)	1 tablet (200 mg)

- KISQALI is given as 600 mg (3 x 200-mg tablets) orally once daily (3 weeks on, 1 week off) with either:
  - An AI once daily (continuously); in premenopausal patients and men, an LHRH agonist should be administered according to current clinical practice guidelines; or
  - Fulvestrant 500 mg intramuscularly on Days 1, 15, and 29, and once monthly thereafter for postmenopausal patients or men. In male patients, an LHRH agonist should be administered according to current clinical practice guidelines
- Dose adjustments for adverse reactions should be made in a stepwise order by reducing the number of tablets taken
- Dose modification of KISQALI is recommended based on individual safety and tolerability
- If dose reduction below 200 mg/day is required, discontinue treatment
- KISQALI can be taken with or without food

Simple dose reductions with no need for a new prescription or additional cost to patient mid-cycle

References: 1. Mayo Clinic. Long QT syndrome diagnosis & treatment. https://www.mayoclinic.org/diseases-conditions/long-qt-syndrome/diagnosis-treatment/drc-20352524. Accessed July 27, 2023. **2.** Vandenberk B, et al. *J Am Heart Assoc.* 2016;5(6):e003264. **3.** Kisqali [prescribing information]. East Hanover, NJ: Novartis Pharmaceuticals Corp. **4.** Mayo Clinic. Long QT syndrome symptoms & causes. https://www.mayoclinic.org/diseases-conditions/long-qt-syndrome/symptoms-causes/syc-20352518. Accessed July 27, 2023. **5.** Al-Khatib SM, et al. *JAMA.* 2003;289(16):2120-2127. **6.** Vered I, et al. *J Bone Miner Res.* 1990;5(5):469-474.

IMPORTANT SAFETY INFORMATION (continued)

Hepatobiliary toxicity (continued). In MONALEESA-2 and MONALEESA-3, concurrent elevations in ALT or AST greater than 3 times the upper limit of normal (ULN) and total bilirubin greater than 2 times the ULN, with normal alkaline phosphatase, in the absence of cholestasis occurred in 6 (1%) patients and all patients recovered after discontinuation of KISQALI. No cases occurred in MONALEESA-7.

Perform liver function tests (LFTs) before initiating therapy with KISQALI. Monitor LFTs every 2 weeks for the first 2 cycles, at the beginning of each of the subsequent 4 cycles, and as clinically indicated. Based on the severity of the transaminase elevations, KISQALI may require dose interruption, reduction, or discontinuation. Recommendations for patients who have elevated AST/ALT grade ≥3 at baseline have not been established.

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IMPORTANT SAFETY INFORMATION (continued)

Neutropenia. Across KISQALI treatment groups neutropenia was the most frequently reported adverse reaction (AR) (75%), and a grade 3/4 decrease in neutrophil count (based on laboratory findings) was reported in 62% of patients in the KISQALI treatment groups. Among the patients who had grade 2, 3, or 4 neutropenia, the median time to grade ≥2 was 17 days. The median time to resolution of grade ≥3 (to normalization or grade <3) was 12 days in the KISQALI treatment groups. Febrile neutropenia was reported in 1.7% of patients in the KISQALI treatment groups. Treatment discontinuation due to neutropenia was 1%.

Perform complete blood count (CBC) before initiating therapy with KISQALI. Monitor CBC every 2 weeks for the first 2 cycles, at the beginning of each of the subsequent 4 cycles, and as clinically indicated. Based on the severity of the neutropenia, KISQALI may require dose interruption, reduction, or discontinuation.

Embryo-fetal toxicity. Based on findings from animal studies and the mechanism of action, KISQALI can cause fetal harm when administered to a pregnant woman. In animal reproduction studies, administration of KISQALI to pregnant rats and rabbits during organogenesis caused embryo-fetal toxicities at maternal exposures that were 0.6 and 1.5 times the human clinical exposure, respectively, based on area under the curve. Advise pregnant women of the potential risk to a fetus. Advise women of reproductive potential to use effective contraception during therapy with KISQALI and for at least 3 weeks after the last dose.

Adverse reactions. Most common (incidence ≥20%) adverse reactions include infections, nausea, fatigue, diarrhea, vomiting, headache, constipation, alopecia, cough, rash, and back pain.

Laboratory abnormalities. Across clinical trials of patients with advanced or metastatic breast cancer, the most common laboratory abnormalities reported in the KISQALI arm (all grades, pooled incidence ≥20%) **were leukocytes decreased, neutrophils decreased, hemoglobin decreased, lymphocytes decreased, AST increased, gamma-glutamyl transferase increased, ALT increased, creatinin increased, platelets decreased, and glucose serum decreased.**

References: 1. Mayo Clinic. Long QT syndrome diagnosis & treatment. https://www.mayoclinic.org/diseases-conditions/long-qt-syndrome/diagnosis-treatment/drc-20352524. Accessed July 27, 2023. **2.** Vandenberk B, et al. *J Am Heart Assoc.* 2016;5(6):e003264. **3.** Kisqali [prescribing information]. East Hanover, NJ: Novartis Pharmaceuticals Corp. **4.** Mayo Clinic. Long QT syndrome symptoms & causes. https://www.mayoclinic.org/diseases-conditions/longqt-syndrome/symptoms-causes/syc-20352518. Accessed July 27, 2023. **5.** Al-Khatib SM, et al. *JAMA.* 2003;289(16):2120-2127. **6.** Vered I, et al. *J Bone Miner Res.* 1990;5(5):469-474.

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