NERLYNX is a kinase inhibitor indicated:

- As a single agent, for the extended adjuvant treatment of adult patients with early-stage HER2-positive breast cancer, to follow adjuvant trastuzumab-based therapy.

- In combination with capecitabine, for the treatment of adult patients with advanced or metastatic HER2-positive breast cancer who have received two or more prior anti-HER2 based regimens in the metastatic setting.

Select IMPORTANT SAFETY INFORMATION

The most common adverse reactions (reported in ≥ 5% of patients) were:

- NERLYNX as a single agent: diarrhea, nausea, abdominal pain, fatigue, vomiting, rash, stomatitis, decreased appetite, muscle spasms, dyspepsia, AST or ALT increased, nail disorder, dry skin, abdominal distention, epistaxis, weight decreased, and urinary tract infection.

- NERLYNX in combination with capecitabine: diarrhea, nausea, vomiting, decreased appetite, constipation, fatigue/asthenia, weight decreased, dizziness, back pain, arthralgia, urinary tract infection, upper respiratory tract infection, abdominal distention, renal impairment, and muscle spasms.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
Extended Adjuvant

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
**NERLYNX IS AN ORAL, ONCE-DAILY THERAPY**

The recommended daily dose of NERLYNX is six 40-mg tablets (240 mg total), taken continuously for 1 year.

**Take 6 Tablets**

40-mg Tablets

**Once a Day**

With Food

**For 1 Year**

Continuously

**Antidiarrheal Medications**

For 1-2 Months

**IMPORTANT**

Take NERLYNX at approximately the same time every day, preferably at mealtime.

Do not chew, crush, or split tablets.

If a dose is missed or vomited, resume NERLYNX the next day.

Avoid grapefruit in any form.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
NERLYNX DOSE ESCALATION

DOSE ESCALATION MAY BE USED AS A DIARRHEA MANAGEMENT AND PREVENTION STRATEGY²

Dose escalation regimen evaluated in the CONTROL study²

120 mg Once Daily

160 mg Once Daily

240 mg Once Daily

WEEK 1

WEEK 2

WEEKS 3-52

3 Tablets

4 Tablets

6 Tablets

+ LOPERAMIDE PRN

• 3.3% (2/60) of patients in the NERLYNX dose escalation arm discontinued treatment due to diarrhea in the first month. No patients in the NERLYNX dose escalation arm discontinued treatment due to diarrhea after the first month*

• CONTROL is a phase 2, open-label, nonrandomized, multicenter, multinational study to evaluate the effects of dose escalation or antidiarrheal prophylaxis on side effects with NERLYNX

* Data are not yet complete; patient treatment is nearing completion.

It is important to titrate up to the full dose of NERLYNX when following the dose escalation regimen²

Select IMPORTANT SAFETY INFORMATION

Diarrhea: Aggressively manage diarrhea. If diarrhea occurs despite recommended prophylaxis, treat with additional anti-diarrheals, fluids, and electrolytes as clinically indicated. Withhold NERLYNX in patients experiencing severe and/or persistent diarrhea. Permanently discontinue NERLYNX in patients experiencing Grade 4 diarrhea or Grade ≥ 2 diarrhea that occurs after maximal dose reduction.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
### ANTIDIARRHEAL PROPHYLAXIS REGIMENS

#### STUDIED PROPHYLAXIS REGIMENS

Proactive diarrhea management with dose escalation and/or antidiarrheal prophylaxis have been shown to lower the incidence and severity of diarrhea and reduce NERLYNX discontinuations due to diarrhea.

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOPERAMIDE</td>
<td>4 mg TID DAYS 1-14</td>
<td>4 mg BID DAYS 15-56</td>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOPERAMIDE</td>
<td>4 mg TID DAYS 1-14</td>
<td>4 mg BID DAYS 15-56</td>
<td>OR</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUDESONIDE</td>
<td>9 mg QD DAYS 1-28</td>
<td>OR</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOPERAMIDE</td>
<td>4 mg TID DAYS 1-14</td>
<td>4 mg BID DAYS 15-28</td>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLESTIPOL</td>
<td>2 g BID DAYS 1-28</td>
<td>OR</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOPERAMIDE</td>
<td>PRN (UP TO 16 mg/DAY)</td>
<td>OR</td>
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</tr>
<tr>
<td>COLESTIPOL</td>
<td>2 g BID DAYS 1-28</td>
<td>OR</td>
<td></td>
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</tr>
</tbody>
</table>

BID: twice daily; PRN: as needed; QD: once daily; TID: three times daily.

*Unless otherwise mandated, all patients received loperamide as needed (16 mg/day max) on days 1 through 364.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
## ANTIDIARRHEAL PROPHYLAXIS

- Diarrhea management should be started with the first dose of NERLYNX<sup>1</sup>
- Medications that help manage diarrhea have different mechanisms of action; if one doesn’t work, another might
- Dietary changes or NERLYNX dose modifications may also help manage side effects<sup>1</sup>

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>MECHANISM</th>
</tr>
</thead>
</table>
| Budesonide<sup>3</sup> Anti-inflammatory | • Glucocorticosteroid with substantial first-pass elimination  
• The formulation contains granules that are coated to protect from dissolution in gastric juice, but dissolve at pH >5.5, ie, normally when the granules reach the small intestine |
| Colestipol<sup>4</sup> Bile acid sequestrant | • Colestipol hydrochloride binds bile acids in the intestine, forming a complex that is excreted in the feces  
• Constipation is the most common adverse reaction of colestipol treatment  
• Take colestipol ≥1 hour after or ≥4 hours before NERLYNX |
| Loperamide<sup>5</sup> Antidiarrheal | • Opiate receptor agonist that binds to μ-opioid receptors in the large intestine  
• Inhibits the release of acetylcholine and prostaglandins, reducing propulsive peristalsis and increasing intestinal transit time  
• Reduces daily fecal volume, increases the viscosity and bulk density, and diminishes the loss of fluid and electrolytes |

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Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
DOSE MODIFICATIONS

SIMPLE DOSE REDUCTIONS TO HELP MANAGE SIDE EFFECTS

NERLYNX dose modification options

Recommended Starting Dose

1st Reduction

2nd Reduction

3rd Reduction

Patients who experienced dose holds and reductions maintained efficacy.

NERLYNX dose modifications are recommended based on individual safety and tolerability; adjust the dose as clinically indicated.

Some adverse reactions may require dose interruption, reduction, or discontinuation.

* Discontinue NERLYNX for patients who fail to recover to grade 0-1 or baseline from treatment-related toxicity, for toxicities that result in a treatment delay >3 weeks, or for patients who are unable to tolerate 120 mg daily.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
DOSE MODIFICATIONS: MANAGEMENT OF DIARRHEA

Management of diarrhea requires antidiarrheals, dietary changes, supportive care, and appropriate dose modifications.

**SEVERITY OF DIARRHEA***

- **Grade 1**
- **Grade 2 lasting ≤5 days**
- **Grade 3 lasting ≤2 days**

- **Any grade with complicated features†**
  - **Grade 2 lasting >5 days§**
  - **Grade 3 lasting >2 days§**

- **Grade 4**
- **Any grade leading to treatment delay of >3 weeks**

**Resolutions**

- **Diarrhea resolves to grade 0-1 in ≤1 week (7 days)**
- **Diarrhea resolves to grade 0-1 in >1 week**

**Resume NERLYNX at the same dose**

**Resume NERLYNX at a reduced dose**

**Permanently discontinue NERLYNX if diarrhea recurs to grade ≥2 at 120 mg daily**

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*Grading per CTCAE v5.0. Dose modification guidance per NERLYNX package insert. † Institute the following: diet modifications, maintain ~2 L fluid intake per day, and once event resolves to grade ≤1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration. ‡ Complicated features include dehydration, fever, hypotension, renal failure, or grade 3 or 4 neutropenia. § Despite being treated with optimal medical therapy.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
Metastatic

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
NERLYNX + CAPECITABINE IS ADMINISTERED IN A 21-DAY DOSING CYCLE

NERLYNX is administered continuously with no breaks throughout the 21-day treatment cycle.

**NERLYNX**
- Recommended dose is 240 mg once daily

**Capecitabine**
- Recommended dose is 1500 mg/m² (750 mg/m² BID)

- Instruct patients to take capecitabine with water within 30 minutes after a meal on days 1 to 14 of each 21-day cycle.

* Administer loperamide starting with the first dose of NERLYNX: 4 mg TID on days 1-14; 4 mg BID on days 15-56; then 4 mg PRN (not to exceed 16 mg per day).

**Recommended dose of NERLYNX is 240 mg once daily**

**Recommended dose of capecitabine is 1500 mg/m² (750 mg/m² BID)**

BID: twice daily; PRN: as needed; TID: three times daily.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
DOSE MODIFICATIONS

SIMPLE DOSE REDUCTIONS TO HELP MANAGE SIDE EFFECTS

- Proactive management, including antidiarrheal medications, and dietary changes may help patients remain on therapy

NERLYNX dose modification options

Recommended Starting Dose
- Daily Dose: 240 mg

1st Reduction
- Daily Dose: 160 mg

2nd Reduction
- Daily Dose: 120 mg

NERLYNX dose modifications are recommended based on individual safety and tolerability; adjust the dose as clinically indicated

Some adverse reactions may require dose interruption, reduction, or discontinuation.

* Discontinue NERLYNX for patients who fail to recover to grade 0-1 or baseline from treatment-related toxicity, for toxicities that result in a treatment delay >3 weeks, or for patients who are unable to tolerate 120 mg daily.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
DOSE MODIFICATIONS: MANAGEMENT OF DIARRHEA

Management of diarrhea requires antidiarrheals, dietary changes, supportive care, and appropriate dose modifications.

SEVERITY OF DIARRHEA*

- Grade 1
- Grade 2 lasting ≤5 days
- Grade 3 lasting ≤2 days

- Persisting and intolerable grade 2 lasting >5 days
- Grade 3 lasting >2 days
- Grade 4

Second event

- Reduce NERLYNX if not previously reduced†
- Reduce capecitabine if NERLYNX was previously reduced†,‡

• Adjust antidiarrheal treatment†

- Interrupt NERLYNX+ capecitabine†

Recovery occurs ≤1 week after withholding treatment

Resume NERLYNX + capecitabine at the same dose

Recovery occurs within 1-3 weeks after withholding treatment

Reduce NERLYNX + maintain capecitabine dose

Subsequent events: reduce the dose of NERLYNX or capecitabine in an alternate fashion†,†,§

* Grading per CTCAE v5.0. Dose modification guidance per NERLYNX package insert. † Institute the following: diet modifications, maintain ~2 L fluid intake per day, and once event resolves to grade ≤1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration. ‡ Reduce dose of capecitabine to 550 mg/m² twice daily. Since capecitabine is provided as 150 mg or 500 mg tablets, it is recommended that the capecitabine dose reduction(s) is rounded down to the nearest 500 mg or multiple of 150 mg for the twice-daily dose. If the patient’s body surface area is >2.0, the standard of care for the study center can be utilized for capecitabine mg/m² dosing. When NERLYNX is used in combination with capecitabine, refer to the capecitabine US Prescribing Information for dose modifications of capecitabine. § Reduce capecitabine if NERLYNX was previously reduced or reduce NERLYNX if capecitabine was previously reduced.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
General Information

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
Take NERLYNX at mealtime and follow suggested dietary modifications, including but not limited to:

- Stopping all lactose-containing products
- Drinking 8-10 large glasses (approximately 2 liters) of clear liquids per day
- Eating smaller, more frequent meals

### WHAT TO EAT

| Foods that are low in fiber | eg, bananas, white rice, applesauce, white bread |
| Foods that are high in protein | eg, beef, skinless chicken, turkey, eggs |
| Foods that are high in potassium | eg, bananas, skinless potatoes, avocados, asparagus tips |
| Yogurt | Yogurt contains “good” bacteria known as probiotics, which can shorten the duration of diarrhea. |

### WHAT TO AVOID

| Other dairy products | eg, milk, cheese, ice cream |
| Alcohol, caffeinated drinks, and sugary sodas | eg, beer, wine, coffee, soda |
| Greasy, fatty, and spicy foods | eg, fried chicken, pizza, peppers |
| Foods that are high in fiber | eg, popcorn, pickles, whole-grain bread, brown rice |
| Foods that cause intestinal gas | eg, broccoli, cabbage, beans, cauliflower |
| Grapefruit and grapefruit products | grapefruit |

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
GENERAL INFORMATION

Perform stool cultures as clinically indicated to exclude infectious causes of grade 3 or 4 diarrhea or diarrhea of any grade with complicated features.

NCI CTCAE grading for diarrhea:

- **GRADE 1**: Increase of <4 stools per day over baseline; mild increase in ostomy output compared to baseline
- **GRADE 2**: Increase of 4-6 stools per day over baseline; moderate increase in ostomy output compared to baseline; limiting instrumental ADL
- **GRADE 3**: Increase of ≥7 stools per day over baseline; hospitalization indicated; severe increase in ostomy output compared to baseline; limiting self-care ADL
- **GRADE 4**: Life-threatening consequences; urgent intervention indicated

Based on NCI CTCAE v5.0 grading.

ADL: activities of daily living; NCI CTCAE: National Cancer Institute Common Terminology Criteria for Adverse Events v5.0.

PRACTICAL APPLICATION

**HYPOTHETICAL PATIENT CASE (EXTENDED ADJUVANT)**

- **NERLYNX 240 mg**: 1 week
- **DIARRHEA RESOLVES**: 1-3 weeks
- **DOSE REDUCTION**: ADJUST ANTI-DIARRHEALS
- **NERLYNX 200 mg**: 1 week

* Complicated features include dehydration, fever, hypotension, renal failure, or grade 3 or 4 neutropenia.
† Institute the following: diet modifications, maintain ~2 L fluid intake per day, and once event resolves to grade ≤1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
### DOSE MODIFICATIONS: ADVERSE EVENTS

#### General Toxicities*

<table>
<thead>
<tr>
<th>TOXICITY SEVERITY†</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRADE 3</strong></td>
<td>Hold NERLYNX until recovery to grade ≤1 or baseline within 3 weeks of stopping treatment, then resume NERLYNX at the next lower dose level</td>
</tr>
<tr>
<td><strong>GRADE 4</strong></td>
<td>Discontinue NERLYNX permanently</td>
</tr>
</tbody>
</table>

#### Hepatic Impairment

- Reduce the NERLYNX starting dose to 80 mg in patients with severe hepatic impairment (Child-Pugh C)
- No dose modifications are recommended for patients with mild to moderate hepatic impairment (Child-Pugh A or B)

#### Hepatotoxicity

- Evaluate liver function tests in patients who experience grade ≥3 diarrhea requiring IV fluid treatment or any signs or symptoms of hepatotoxicity
- Collect fractionated bilirubin and prothrombin time during hepatotoxicity evaluation

<table>
<thead>
<tr>
<th>HEPATOTOXICITY SEVERITY†</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3 ALT or AST (≥5–20×ULN) OR Grade 3 bilirubin (≥3–10×ULN)</td>
<td>Hold NERLYNX until recovery to grade ≤1</td>
</tr>
<tr>
<td></td>
<td>Evaluate alternative causes</td>
</tr>
<tr>
<td>Grade 4 ALT or AST (≥20×ULN) OR Grade 4 bilirubin (≥10×ULN)</td>
<td>Discontinue NERLYNX permanently</td>
</tr>
<tr>
<td></td>
<td>Evaluate alternative causes</td>
</tr>
</tbody>
</table>

ALT: alanine aminotransferase; AST: aspartate aminotrasferase; IV: intravenous; ULN: upper limit of normal.
* Also refer to diarrhea and hepatotoxicity dose modifications in this guide.
† Grading per CTCAE v5.0. Dose modification guidance per NERLYNX package insert.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
# Effects of Other Drugs on Nerlynx

## Gastric Acid-Reducing Agents
- Avoid concomitant administration of Nerlynx with proton pump inhibitors, eg, omeprazole, pantoprazole, lansoprazole, esomeprazole. When patients require gastric acid-reducing agents, use an H₂-receptor antagonist or antacid.
- Nerlynx should be taken at least 3 hours after antacids.
- Nerlynx should be taken at least 2 hours before or 10 hours after H₂-receptor antagonists.

## Strong CYP3A4 Inhibitors
**Clinical Impact**
- Concomitant use of Nerlynx with strong CYP3A4 inhibitors may increase Nerlynx concentrations.
- Increased Nerlynx concentrations may increase the risk of toxicity.

**Prevention**
- Avoid concomitant use.

**Examples**
- Azithromycin, ketoconazole, clarithromycin, ritonavir, diltiazem.

## Moderate CYP3A4 and P-gp Dual Inhibitors
**Clinical Impact**
- Concomitant use of Nerlynx with moderate CYP3A4 and P-gp dual inhibitors may increase Nerlynx concentrations.
- Increased Nerlynx concentrations may increase the risk of toxicity.

**Prevention**
- Avoid concomitant use.

## CYP3A4 Inducers
**Clinical Impact**
- Concomitant use of Nerlynx with strong or moderate CYP3A4 inducers may decrease Nerlynx concentrations.
- Decreased Nerlynx AUC may reduce Nerlynx activity.

**Prevention**
- Avoid concomitant use.

**Examples**
- Rifampin, carbamazepine, enzalutamide, St. John’s wort.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
EFFECT OF NERLYNX ON OTHER DRUGS¹

P-glycoprotein (P-gp) Substrates

- Concomitant use of NERLYNX with digoxin, a P-gp substrate, increased digoxin concentrations
- Increased concentrations of digoxin may lead to increased risk of adverse reactions including cardiac toxicity; refer to the digoxin prescribing information for dosage adjustment recommendations due to drug interactions
- NERLYNX may inhibit the transport of other P-gp substrates (eg, dabigatran, fexofenadine). Monitor for adverse reactions of narrow therapeutic agents that are P-gp substrates when used concomitantly with NERLYNX

TOXICITY WARNINGS¹

Hepatotoxicity

- NERLYNX has been associated with hepatotoxicity characterized by increased liver enzymes
- Monitor liver function tests monthly for the first 3 months of treatment, then every 3 months while on treatment and as clinically indicated

Embryo-Fetal Toxicity

- NERLYNX can cause fetal harm when administered to a pregnant woman; advise pregnant women of the potential risk to a fetus
- Advise females of reproductive potential to use effective contraception during treatment and for at least 1 month after the last dose

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
IMPORTANT SAFETY INFORMATION

NERLYNX® (neratinib) tablets, for oral use

INDICATIONS AND USAGE: NERLYNX is a kinase inhibitor indicated:
• As a single agent, for the extended adjuvant treatment of adult patients with early-stage HER2-positive breast cancer, to follow adjuvant trastuzumab-based therapy.
• In combination with capecitabine, for the treatment of adult patients with advanced or metastatic HER2-positive breast cancer who have received two or more prior anti-HER2 based regimens in the metastatic setting.

CONTRAINDICATIONS: None

WARNINGS AND PRECAUTIONS:
• Diarrhea: Aggressively manage diarrhea. If diarrhea occurs despite recommended prophylaxis, treat with additional anti-diarrheals, fluids, and electrolytes as clinically indicated. Withhold NERLYNX in patients experiencing severe and/or persistent diarrhea. Permanently discontinue NERLYNX in patients experiencing Grade 4 diarrhea or Grade ≥2 diarrhea that occurs after maximal dose reduction.
• Hepatotoxicity: Monitor liver function tests monthly for the first 3 months of treatment, then every 3 months while on treatment and as clinically indicated. Withhold NERLYNX in patients experiencing Grade 3 liver abnormalities and permanently discontinue NERLYNX in patients experiencing Grade 4 liver abnormalities.
• Embryo-Fetal Toxicity: NERLYNX can cause fetal harm. Advise patients of potential risk to a fetus and to use effective contraception.

ADVERSE REACTIONS: The most common adverse reactions (reported in ≥5% of patients) were:
• NERLYNX as a single agent: diarrhea, nausea, abdominal pain, fatigue, vomiting, rash, stomatitis, decreased appetite, muscle spasms, dyspepsia, AST or ALT increased, nail disorder, dry skin, abdominal distention, epistaxis, weight decreased, and urinary tract infection.
• NERLYNX in combination with capecitabine: diarrhea, nausea, vomiting, decreased appetite, constipation, fatigue/asthenia, weight decreased, dizziness, back pain, arthralgia, urinary tract infection, upper respiratory tract infection, abdominal distention, renal impairment, and muscle spasms.

To report SUSPECTED ADVERSE REACTIONS, contact Puma Biotechnology, Inc. at 1-844-NERLYNX (1-844-637-5969) or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

DRUG INTERACTIONS:
• Gastric acid reducing agents: Avoid concomitant use with proton pump inhibitors. When patients require gastric acid reducing agents, use an H₂-receptor antagonist or antacid. Separate NERLYNX by at least 3 hours with antacids. Separate NERLYNX by at least 2 hours before or 10 hours after H₂-receptor antagonists.
• Strong CYP3A4 inhibitors: Avoid concomitant use.
• Moderate CYP3A4 and P-glycoprotein (P-gp) dual inhibitors: Avoid concomitant use.
• Strong or moderate CYP3A4 inducers: Avoid concomitant use.
• P-glycoprotein (P-gp) substrates: Monitor for adverse reactions of narrow therapeutic agents that are P-gp substrates when used concomitantly with NERLYNX.

USE IN SPECIFIC POPULATIONS:
• Lactation: Advise women not to breastfeed.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.

Patient Support

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
Benefits Verification & Prior Authorization Assistance
Our reimbursement counselors will conduct a benefits investigation, verify insurance approval or coverage, and obtain and submit necessary documentation for patients requiring prior authorization.

Co-Pay Assistance
Puma Biotechnology offers co-pay assistance to help qualified insured patients with the out-of-pocket costs associated with their NERLYNX prescription.

NERLYNX Quick Start
Provides a free 3-week supply of NERLYNX to eligible patients experiencing delays in gaining access to therapy.

Financial Support
For patients with financial needs, we will work to find appropriate sources for support.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
NERLYNX Mentor Program
Available to all patients with early-stage HER2+ breast cancer who are considering or currently taking NERLYNX but have not started treatment.

Nurse Call Center
Our nurses are available to speak with patients and healthcare providers to answer questions about NERLYNX. The call center is open Monday to Friday, 9 AM to 8 PM ET, for your convenience.

Product Support
Our specialty pharmacy network will provide patients with product education and side effect counseling to help them better understand and manage their NERLYNX therapy.

Text Message Support
Patients can sign up to receive medication reminders and motivational messages to support treatment adherence.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.
**PREVENT**

**RECURRENTNESS**\(^{11,12,*}\)

*(REDUCE THE RISK OF RECURRENCE IN eBC)*

**PROTECT**

**AGAINST PROGRESSION**\(^{1}\)

*(INCREASE PFS IN mBC)*

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**Select IMPORTANT SAFETY INFORMATION**

- **Diarrhea:** Aggressively manage diarrhea. If diarrhea occurs despite recommended prophylaxis, treat with additional anti-diarrheals, fluids, and electrolytes as clinically indicated.

- **Hepatotoxicity:** Monitor liver function tests monthly for the first 3 months of treatment, then every 3 months while on treatment and as clinically indicated.

- **Embryo-Fetal Toxicity:** NERLYNX can cause fetal harm. Advise patients of potential risk to a fetus and to use effective contraception.

Please see additional IMPORTANT SAFETY INFORMATION throughout this brochure and accompanying Full Prescribing Information including Patient Information.

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NERLYNX® (neratinib) tablets, for oral use

Initial U.S. Approval: 2017

### RECENT MAJOR CHANGES

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<td>Dosage and Administration, Dose Modifications (2.3)</td>
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<td>Warnings and Precautions, Diarrhea (5.1)</td>
<td>2/2020</td>
</tr>
<tr>
<td>Warnings and Precautions, Hepatotoxicity (5.2)</td>
<td>2/2020</td>
</tr>
</tbody>
</table>

### INDICATIONS AND USAGE

NERLYNX is a kinase inhibitor indicated:

- As a single agent, for the extended adjuvant treatment of adult patients with early stage HER2-positive breast cancer, to follow adjuvant trastuzumab-based therapy. (1.1)
- In combination with capecitabine, for the treatment of adult patients with advanced or metastatic HER2-positive breast cancer who have received two or more prior anti-HER2 based regimens in the metastatic setting. (1.2)

### DOSAGE AND ADMINISTRATION

- **Antidiarrheal prophylaxis**: Initiate loperamide with the first dose of NERLYNX and continue during the first 56 days of treatment. After day 56, use loperamide to maintain 1–2 bowel movements per day. (2.1)
- **Extended Adjuvant Treatment of Early Stage Breast Cancer**: 240 mg (6 tablets) given orally once daily, with food, continuously until disease recurrence for up to one year. (2.2)
- **Advanced or metastatic breast cancer**: 240 mg (6 tablets) given orally once daily with food on Days 1–21 of a 21-day cycle plus capecitabine (750 mg/m² given orally twice daily) on Days 1–14 of a 21-day cycle until disease progression or unacceptable toxicities. (2.2)
- **Dose interruptions and/or dose reductions are recommended based on individual safety and tolerability.** (2.3)
- **Hepatotoxicity**: Reduce starting dose to 80 mg in patients with severe hepatic impairment. (2.3)

### DOSAGE FORMS AND STRENGTHS

Tablets: 40 mg. (3)

### CONTRAINDICATIONS

None. (4)

### WARNINGS AND PRECAUTIONS

- **Diarrhea**: Aggressively manage diarrhea. If diarrhea occurs despite recommended prophylaxis, treat with additional antidiarrheals, fluids, and electrolytes as clinically indicated. Withhold NERLYNX in patients experiencing severe and/or persistent diarrhea. Permanently discontinue NERLYNX in patients experiencing Grade 4 diarrhea or Grade ≥2 diarrhea that occurs after maximal dose reduction. (2.3, 5.1)
- **Hepatotoxicity**: Monitor liver function tests monthly for the first 3 months of treatment, then every 3 months while on treatment and as clinically indicated. Withhold NERLYNX in patients experiencing Grade 3 liver abnormalities and permanently discontinue NERLYNX in patients experiencing Grade 4 liver abnormalities. (2.3, 5.2)
- **Embryo-Fetal Toxicity**: NERLYNX can cause fetal harm. Advise patients of potential risk to a fetus and to use effective contraception. (5.3, 8.1, 8.3)

### ADVERSE REACTIONS

The most common adverse reactions (reported in ≥5% of patients) were:

- NERLYNX as a single agent: diarrhea, nausea, abdominal pain, fatigue, vomiting, rash, stomatitis, decreased appetite, muscle spams, dyspepsia, AST or ALT increased, nail disorder, dry skin, abdominal distention, epistaxis, weight decreased, and urinary tract infection. (6)
- NERLYNX in combination with capecitabine: diarrhea, nausea, vomiting, decreased appetite, constipation, fatigue/asthenia, weight decreased, dizziness, back pain, arthralgia, urinary tract infection, upper respiratory tract infection, abdominal distention, renal impairment, and muscle spasms. (6)

To report SUSPECTED ADVERSE REACTIONS, contact Puma Biotechnology, Inc. at 1-844-NERLYNX (1-844-637-5969) or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

### DRUG INTERACTIONS

- **Gastric acid reducing agents**: Avoid concomitant use with proton pump receptor antagonist or antacid. Separate NERLYNX by at least 3 hours after H2-receptor antagonists. (2.1, 2.3, 7.1)
- **Strong or moderate CYP3A4 inducers**: Avoid concomitant use. (7.1)
- **Moderate CYP3A4 and P-gp dual inhibitors**: Avoid concomitant use (7.1)
- **P-glycoprotein (P-gp) substrates**: Monitor for adverse reactions of narrow therapeutic agents that are P-gp substrates when used concomitantly with NERLYNX. (7.2)

### USE IN SPECIFIC POPULATIONS

Lactation: Advise women not to breastfeed. (8.2)

See 17 for PATIENT COUNSELING INFORMATION and FDA-approved patient labeling.

Revised: 072020

### FULL PRESCRIBING INFORMATION: CONTENTS*

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| 1.1 Extended Adjuvant Treatment of Early-Stage Breast Cancer | 8.4 Pediatric Use |
| 1.2 Advanced or Metastatic Breast Cancer | 8.5 Geriatric Use |
| 2 DOSAGE AND ADMINISTRATION      | 8.6 Hepatic Impairment |
| 2.1 Anti diarrheal Prophylaxis   | 10 OVERDOSAGE |
| 2.2 Recommended Dose and Schedule | 11 DESCRIPTION |
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| 3 DOSAGE FORMS AND STRENGTHS     | 12.1 Mechanism of Action |
| 4 CONTRAINDICATIONS              | 12.2 Pharmacodynamics |
| 5 WARNINGS AND PRECAUTIONS       | 12.3 Pharmacokinetics |
| 5.1 Diarrhea                     | 13 NONCLINICAL TOXICOLOGY |
| 5.2 Hepatotoxicity               | 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility |
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| 7 DRUG INTERACTIONS              | 16 HOW SUPPLIED/STORAGE AND HANDLING |
| 7.1 Effect of Other Drugs on NERLYNX | 17 PATIENT COUNSELING INFORMATION |
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| 8 USE IN SPECIFIC POPULATIONS   | |
| 8.1 Pregnancy                    | |
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*Sections or subsections omitted from the full prescribing information are not listed.
1 INDICATIONS AND USAGE

1.1 Extended Adjuvant Treatment of Early-Stage Breast Cancer
NERLYNX as a single agent is indicated for the extended adjuvant treatment of adult patients with early-stage human epidermal growth factor receptor 2 (HER2)-positive breast cancer, to follow adjuvant trastuzumab based therapy [see Clinical Studies (14.1)].

1.2 Advanced or Metastatic Breast Cancer
NERLYNX in combination with capecitabine is indicated for the treatment of adult patients with advanced or metastatic HER2-positive breast cancer who have received two or more prior anti-HER2 based regimens in the metastatic setting [see Clinical Studies (14.2)].

2 DOSAGE AND ADMINISTRATION

2.1 Antidiarrheal Prophylaxis
Administer antidiarrheal prophylaxis during the first 56 days of treatment and initiate with the first dose of NERLYNX [see Warnings and Precautions (5.1) and Adverse Reactions (6.1)]. Instruct patients to take loperamide as directed in Table 1. Titrate loperamide to 1–2 bowel movements per day.

<table>
<thead>
<tr>
<th>Time on Nerlynx</th>
<th>Loperamide Dose and Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks 1–2 (days 1–14)</td>
<td>4 mg three times daily</td>
</tr>
<tr>
<td>Weeks 3–8 (days 15–56)</td>
<td>4 mg twice daily</td>
</tr>
<tr>
<td>Weeks 9–52 (days 57–365)</td>
<td>4 mg as needed, not to exceed 16 mg per day; titrate dosing to achieve 1–2 bowel movements per day</td>
</tr>
</tbody>
</table>

If diarrhea occurs despite prophylaxis, treat with additional antidiarrheals, fluids and electrolytes as clinically indicated. NERLYNX dose interruptions and dose reductions may also be required to manage diarrhea [see Dosage and Administration (2.3)].

2.2 Recommended Dose and Schedule

Extended Adjuvant Treatment of Early Stage Breast Cancer
The recommended dose of NERLYNX is 240 mg (six tablets) given orally once daily, with food, continuously until disease recurrence or for up to one year.

Advanced or Metastatic Breast Cancer
The recommended dose of NERLYNX is 240 mg (six tablets) given orally once daily with food on Days 1–21 of a 21-day cycle plus capecitabine (750 mg/m² given orally twice daily) on Days 1–14 of a 21-day cycle until disease progression or unacceptable toxicities.

Instruct patients to take NERLYNX at approximately the same time every day. NERLYNX tablets should be swallowed whole (tablets should not be chewed, crushed, or split prior to swallowing).

If a patient misses a dose, do not replace missed dose, and instruct the patient to resume NERLYNX with the next scheduled daily dose.
2.3 Dose Modifications

Dose Modifications for Adverse Reactions

NERLYNX dose modification is recommended based on individual safety and tolerability. Management of some adverse reactions may require dose interruption and/or dose reduction as shown in Table 2 to Table 7. Discontinue NERLYNX for patients with adverse reactions that fail to recover to Grade 0–1 or baseline, with toxicities that result in a treatment delay >3 weeks, or if unable to tolerate 120 mg daily. Additional clinical situations may result in dose adjustments as clinically indicated (e.g. intolerable toxicities, persistent Grade 2 adverse reactions, etc.).

When NERLYNX is used in combination with capecitabine, refer to the capecitabine prescribing information for dose modifications of capecitabine.

Table 2: NERLYNX Monotherapy Dose Modifications for Adverse Reactions

<table>
<thead>
<tr>
<th>Dose Level</th>
<th>NERLYNX Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended starting dose</td>
<td>240 mg daily (six 40 mg tablets)</td>
</tr>
<tr>
<td>First dose reduction</td>
<td>200 mg daily (five 40 mg tablets)</td>
</tr>
<tr>
<td>Second dose reduction</td>
<td>160 mg daily (four 40 mg tablets)</td>
</tr>
<tr>
<td>Third dose reduction</td>
<td>120 mg daily (three 40 mg tablets)</td>
</tr>
</tbody>
</table>

Table 3: NERLYNX in Combination with Capecitabine Dose Modifications for Adverse Reactions

<table>
<thead>
<tr>
<th>Dose Level</th>
<th>NERLYNX Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended starting dose</td>
<td>240 mg daily (six 40 mg tablets)</td>
</tr>
<tr>
<td>First dose reduction</td>
<td>160 mg daily (four 40 mg tablets)</td>
</tr>
<tr>
<td>Second dose reduction</td>
<td>120 mg daily (three 40 mg tablets)</td>
</tr>
</tbody>
</table>

Table 4: NERLYNX Dose Modifications and Management – General Toxicities*

<table>
<thead>
<tr>
<th>Severity of Toxicity†</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3</td>
<td>Hold NERLYNX until recovery to Grade ≤1 or baseline within 3 weeks of stopping treatment. Then resume NERLYNX at the next lower dose level.</td>
</tr>
<tr>
<td>Grade 4</td>
<td>Discontinue NERLYNX permanently.</td>
</tr>
</tbody>
</table>

* Refer to Table 5, Table 6, and Table 7 below for management of diarrhea and hepatotoxicity
† Per CTCAE v4.0

Dose Modifications for Diarrhea

Guidelines for adjusting doses of NERLYNX in the setting of diarrhea are shown in Table 5 and Table 6. Diarrhea management may require use of antidiarrheal medications, dietary changes, replacement of fluids and electrolytes and appropriate dose modifications of NERLYNX as clinically indicated.
### Table 5: Dose Modifications of Nerlynx Monotherapy for Diarrhea

<table>
<thead>
<tr>
<th>Severity of Diarrhea*</th>
<th>Action</th>
</tr>
</thead>
</table>
| • Grade 1 diarrhea [increase of <4 stools per day over baseline] | • Adjust antidiarrheal treatment  
| • Grade 2 diarrhea [increase of 4–6 stools per day over baseline] lasting ≤5 days | • Diet modifications  
| • Grade 3 diarrhea [increase of ≥7 stools per day over baseline; incontinence; hospitalization indicated; limiting self-care activities of daily living] lasting ≤2 days | • Fluid intake of ~2 L should be maintained to avoid dehydration  
| | • Once event resolves to ≤Grade 1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration |
| • Any grade with complicated features† | • Interrupt NERLYNX treatment  
| • Grade 2 diarrhea lasting longer than 5 days‡ | • Diet modifications  
| • Grade 3 diarrhea lasting longer than 2 days‡ | • Fluid intake of ~2 L should be maintained to avoid dehydration  
| | • If diarrhea resolves to Grade 0–1 in one week or less, then resume NERLYNX treatment at the same dose.  
| | • If diarrhea resolves to Grade 0–1 in longer than one week, then resume NERLYNX treatment at reduced dose (see Table 2)  
| | • Once event resolves to ≤Grade 1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration |
| • Grade 4 diarrhea [life-threatening consequences; urgent intervention indicated] | • Permanently discontinue NERLYNX treatment |
| • Diarrhea recurs to Grade 2 or higher at 120 mg per day | • Permanently discontinue NERLYNX treatment |

* Per CTCAE v4.0  
† Complicated features include dehydration, fever, hypotension, renal failure, or Grade 3 or 4 neutropenia  
‡ Despite being treated with optimal medical therapy 

Reference ID: 4648556
<table>
<thead>
<tr>
<th>Severity of Diarrhea*</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Grade 1 Diarrhea [Increase of &lt;4 stools per day over baseline]</td>
<td>• Adjust antidiarrheal treatment</td>
</tr>
<tr>
<td>• Grade 2 Diarrhea [Increase of 4–6 stools per day over baseline] lasting ≤5 days</td>
<td>• Continue NERLYNX and capecitabine at full doses</td>
</tr>
<tr>
<td>• Grade 3 Diarrhea: [Increase of ≥7 stools per day over baseline; incontinence; hospitalization indicated; limiting self-care and activities of daily living] lasting ≤2 days</td>
<td>• Diet modifications</td>
</tr>
<tr>
<td>• Persistence and intolerable Grade 2 Diarrhea: lasting &gt;5 days</td>
<td>• Fluid intake of ~2 L/day should be maintained to avoid dehydration</td>
</tr>
<tr>
<td>• Grade 3 Diarrhea lasting &gt;2 days</td>
<td>• Once the event resolved to Grade ≤1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration</td>
</tr>
<tr>
<td>• Grade 4 diarrhea [Life-threatening consequences; urgent intervention indicated]</td>
<td>• Adjust antidiarrheal treatment</td>
</tr>
<tr>
<td></td>
<td>• Hold NERLYNX and capecitabine until recovery to Grade ≤1 or baseline</td>
</tr>
<tr>
<td></td>
<td>• Diet modifications</td>
</tr>
<tr>
<td></td>
<td>• Fluid intake of ~2 L/day should be maintained intravenously, if needed</td>
</tr>
<tr>
<td></td>
<td>• If recovery occurs:</td>
</tr>
<tr>
<td></td>
<td>o ≤1 week after withholding treatment, resume same doses of NERLYNX and capecitabine</td>
</tr>
<tr>
<td></td>
<td>o Within 1–3 weeks after withholding treatment, reduce NERLYNX dose to 160 mg and maintain the same dose of capecitabine</td>
</tr>
<tr>
<td></td>
<td>• If event occurs a second time and the NERLYNX dose has not already been decreased, reduce NERLYNX dose to 160 mg (maintain the same dose of capecitabine). If NERLYNX dose has already been reduced, then reduce the dose of capecitabine to 550 mg/m² given twice dailya (maintain the same dose of NERLYNX).</td>
</tr>
<tr>
<td></td>
<td>• If subsequent events occur, reduce the dose of NERLYNX or capecitabine to the next lower dose level in an alternate fashion (i.e., reduce capecitabine to 375 mg/m² given twice dailya if NERLYNX was previously reduced, or reduce NERLYNX to 120 mg if capecitabine was previously reduced).</td>
</tr>
<tr>
<td></td>
<td>• Once the event resolved to Grade ≤1 or baseline, start loperamide 4 mg with each subsequent NERLYNX administration.</td>
</tr>
</tbody>
</table>

Abbreviations: L: liter
* NCI CTCAE v.4.0

Reference ID: 4648556
Since capecitabine is provided as 150 mg or 500 mg tablets, it is recommended that the capecitabine dose reduction(s) is rounded down to the nearest 500 mg or multiple of 150 mg for the twice daily dose. If the patient’s body surface area is >2.0, the standard of care for the study center can be utilized for capecitabine mg/m² dosing.
Dose Modifications for Hepatic Impairment

Reduce the NERLYNX starting dose to 80 mg in patients with severe hepatic impairment (Child Pugh C). No dose modifications are recommended for patients with mild to moderate hepatic impairment (Child Pugh A or B) [see Use in Specific Populations (8.6) and Clinical Pharmacology (12.3)].

Dose Modifications for Hepatotoxicity

Guidelines for dose adjustment of NERLYNX in the event of liver toxicity are shown in Table 7. Patients who experience ≥Grade 3 diarrhea requiring IV fluid treatment or any signs or symptoms of hepatotoxicity, such as worsening of fatigue, nausea, vomiting, right upper quadrant pain or tenderness, fever, rash, or eosinophilia, should be evaluated for changes in liver function tests. Fractionated bilirubin and prothrombin time should also be collected during hepatotoxicity evaluation [see Warnings and Precautions (5.2)].

Table 7: Dose Modifications for Hepatotoxicity

<table>
<thead>
<tr>
<th>Severity of Hepatotoxicity*</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3 ALT or AST (&gt;5–20× ULN) OR Grade 3 bilirubin (&gt;3–10× ULN)</td>
<td>Hold NERLYNX until recovery to ≤Grade 1 Evaluate alternative causes Resume NERLYNX at the next lower dose level if recovery to ≤Grade 1 occurs within 3 weeks. If Grade 3 ALT or AST, or bilirubin occurs again despite one dose reduction, permanently discontinue NERLYNX</td>
</tr>
<tr>
<td>Grade 4 ALT or AST (&gt;20× ULN) OR Grade 4 bilirubin (&gt;10× ULN)</td>
<td>Permanently discontinue NERLYNX Evaluate alternative causes</td>
</tr>
</tbody>
</table>

ALT=Alanine Aminotransferase; AST=Aspartate Aminotransferase; ULN=Upper Limit Normal
* Per CTCAE v4.0

Concomitant Use with Gastric Acid Reducing Agents

Proton pump inhibitors (PPI): Avoid concomitant use with NERLYNX [see Drug Interactions (7.1)].

H₂-receptor antagonists: Take NERLYNX at least 2 hours before the next dose of the H₂-receptor antagonist or 10 hours after the H₂-receptor antagonist [see Drug Interactions (7.1)].

Antacids: Separate dosing of NERLYNX by 3 hours after antacids [see Drug Interactions (7.1)].

3 DOSAGE FORMS AND STRENGTHS

Tablets: 40 mg neratinib (equivalent to 48.31 mg of neratinib maleate).

Film-coated, red, oval shaped and debossed with ‘W104’ on one side and plain on the other side.

4 CONTRAINDICATIONS

None.
5 WARNINGS AND PRECAUTIONS

5.1 Diarrhea

Severe diarrhea and sequelae, such as dehydration, hypotension, and renal failure occurred during treatment with NERLYNX. Diarrhea was reported in 95% of NERLYNX-treated patients in ExteNET, a randomized placebo-controlled trial in the extended adjuvant setting who were not required to receive antidiarrheal prophylaxis. In the NERLYNX arm, Grade 3 diarrhea occurred in 40% and Grade 4 diarrhea occurred in 0.1% of patients. The majority of patients (93%) had diarrhea in the first month of treatment, the median time to first onset of Grade ≥3 diarrhea was 8 days (range, 1–350), and the median cumulative duration of Grade ≥3 diarrhea was 5 days (range, 1–139) [see Adverse Reactions (6.1)].

Diarrhea was reported in 83% of NERLYNX plus capecitabine treated patients in NALA, a randomized placebo-controlled trial in the metastatic breast cancer setting who were required to receive anti-diarrheal prophylaxis in the first 21-day cycle. The majority of patients (70%) had diarrhea in the first 21 days of treatment, the median time to first onset of Grade ≥3 diarrhea was 11 days (range, 2–728) and the median cumulative duration of Grade ≥3 diarrhea was 3 days (range, 1–21). In the NERLYNX plus capecitabine arm, Grade 3 diarrhea occurred in 24% of patients [see Adverse Reactions (6.1)].

Antidiarrheal prophylaxis has been shown to lower the incidence and severity of diarrhea. Instruct patients to initiate antidiarrheal prophylaxis with loperamide along with the first dose of NERLYNX and continue during the first 56 days of treatment; after day 56, titrate dose to achieve 1–2 bowel movements per day and not to exceed 16 mg loperamide per day [see Dosage and Administration (2.1)]. Consider adding other agents to loperamide as clinically indicated [see Adverse Reactions (6.1)].

Monitor patients for diarrhea and treat with additional antidiarrheals as needed. When severe diarrhea with dehydration occurs, administer fluid and electrolytes as needed, interrupt NERLYNX, and reduce subsequent doses [see Dosage and Administration (2.3)]. Perform stool cultures as clinically indicated to exclude infectious causes of Grade 3 or 4 diarrhea or diarrhea of any grade with complicating features (dehydration, fever, neutropenia).

5.2 Hepatotoxicity

NERLYNX has been associated with hepatotoxicity characterized by increased liver enzymes. In ExteNET, 10% of patients experienced an alanine aminotransferase (ALT) increase ≥2× ULN, 5% of patients experienced an aspartate aminotransferase (AST) increase ≥2× ULN, and 1.7% of patients experienced an AST or ALT elevation >5× ULN (≥Grade 3). Hepatotoxicity or increases in liver transaminases led to drug discontinuation in 1.7% of NERLYNX-treated patients.

In the NALA study, in NERLYNX and capecitabine-treated patients, 7% experienced an ALT or AST >3× ULN, 2% experienced ALT or AST >5× ULN, 7% experienced a bilirubin >1.5× ULN, and 1.3% experienced a bilirubin >3× ULN. Hepatotoxicity or increases in liver transaminases led to drug discontinuation in 0.3% of NERLYNX and capecitabine-treated patients.

Total bilirubin, AST, ALT, and alkaline phosphatase should be measured prior to starting treatment with NERLYNX monthly for the first 3 months of treatment, then every 3 months while on treatment and as clinically indicated. These tests should also be performed in patients experiencing Grade 3 diarrhea or any signs or symptoms of hepatotoxicity, such as worsening of fatigue, nausea, vomiting, right upper quadrant tenderness, fever, rash, or eosinophilia [see Dosage and Administration (2.3) and Adverse Reactions (6.1)].

5.3 Embryo-Fetal Toxicity

Based on findings from animal studies and its mechanism of action, NERLYNX can cause fetal harm when administered to a pregnant woman. In animal reproduction studies, administration of neratinib to pregnant rabbits during organogenesis caused abortions, embryo-fetal death, and fetal abnormalities in rabbits at maternal...
AUCs approximately 0.2 times the AUC in patients receiving the recommended dose. Advise pregnant women of the potential risk to a fetus. Advise females of reproductive potential to use effective contraception during treatment and for at least 1 month after the last dose. [see Use in Specific Populations (8.1, 8.3) and Clinical Pharmacology (12.1)].

6 ADVERSE REACTIONS

The following clinically significant adverse reactions are described elsewhere in the labeling:

- Diarrhea [see Warnings and Precautions (5.1)]
- Hepatotoxicity [see Warnings and Precautions (5.2)]

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

Extended Adjuvant Treatment of Early Stage Breast Cancer

ExteNET

The data described below reflect the safety data of NERLYNX as a single agent in ExteNET a multicenter, randomized, double-blind, placebo-controlled study of NERLYNX within 2 years after completion of adjuvant treatment with trastuzumab-based therapy in women with HER2-positive early-stage breast cancer. Patients who received NERLYNX in this trial were not required to receive any prophylaxis with antidiarrheal agents to prevent the NERLYNX-related diarrhea. Patients were treated with 240 mg of NERLYNX given orally once daily with food, continuously until disease recurrence or for up to one year. The median duration of treatment was 11.6 months in the NERLYNX arm and 11.8 months in the placebo arm. The median age was 52 years (60% were ≥50 years old, 12% were ≥65 years old); 81% were Caucasian, 3% Black or African American, 14% Asian, and 3% other. A total of 1408 patients were treated with NERLYNX.

NERLYNX dose reduction due to an adverse reaction of any grade occurred in 31% of patients receiving NERLYNX compared to 2.6% of patients receiving placebo. Permanent discontinuation due to any adverse reaction was reported in 28% of NERLYNX-treated patients. The most common adverse reaction leading to discontinuation was diarrhea, accounting for 17% of NERLYNX-treated patients.

The most common adverse reactions (≥5%) were diarrhea, nausea, abdominal pain, fatigue, vomiting, rash, stomatitis, decreased appetite, muscle spasms, dyspepsia, AST or ALT increased, nail disorder, dry skin, abdominal distention, epistaxis, weight decreased, and urinary tract infection. The most frequently reported Grade 3 or 4 adverse reactions were diarrhea, vomiting, nausea, and abdominal pain.

Serious adverse reactions in the NERLYNX arm included diarrhea (1.6%), vomiting (0.9%), dehydration (0.6%), cellulitis (0.4%), renal failure (0.4%), erysipelas (0.4%), ALT (0.3%), AST increased (0.3%), nausea (0.3%), fatigue (0.2%), and abdominal pain (0.2%).

Table 8 summarizes the adverse reactions in ExteNET.

Table 8: Adverse Reactions Reported in ≥2% of NERLYNX-Treated Patients in ExteNET

<table>
<thead>
<tr>
<th>System Organ Class (Preferred Term)</th>
<th>NERLYNX n=1408</th>
<th>Placebo n=1408</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Grades (%)</td>
<td>Grade 3 (%)</td>
</tr>
<tr>
<td>Gastrointestinal Disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td>95</td>
<td>40</td>
</tr>
<tr>
<td>Nausea</td>
<td>43</td>
<td>2</td>
</tr>
</tbody>
</table>
**System Organ Class (Preferred Term)**

<table>
<thead>
<tr>
<th></th>
<th>NERLYNX n=1408</th>
<th></th>
<th></th>
<th>Placebo n=1408</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Grades (%)</td>
<td>Grade 3 (%)</td>
<td>Grade 4 (%)</td>
<td>All Grades (%)</td>
<td>Grade 3 (%)</td>
<td>Grade 4 (%)</td>
</tr>
<tr>
<td>Abdominal pain*</td>
<td>36</td>
<td>2</td>
<td>0</td>
<td>15</td>
<td>0.4</td>
<td>0</td>
</tr>
<tr>
<td>Vomiting</td>
<td>26</td>
<td>3</td>
<td>0</td>
<td>8</td>
<td>0.4</td>
<td>0</td>
</tr>
<tr>
<td>Stomatitis†</td>
<td>14</td>
<td>0.6</td>
<td>0</td>
<td>6</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>Dyspepsia</td>
<td>10</td>
<td>0.4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>5</td>
<td>0.3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dry mouth</td>
<td>3</td>
<td>0.1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
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</table>

**General Disorders and Administration Site Conditions**

<p>| | | | | | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>Fatigue</td>
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<td>0</td>
<td>20</td>
<td>0.4</td>
<td>0</td>
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</table>

**Hepatobiliary Disorders**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alanine aminotransferase increased</td>
<td>9</td>
<td>1</td>
<td>0.2</td>
<td>3</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Aspartate aminotransferase increased</td>
<td>7</td>
<td>0.5</td>
<td>0.2</td>
<td>3</td>
<td>0.3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Infections and Infestations**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Urinary tract infection</td>
<td>5</td>
<td>0.1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Investigations**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Weight decreased</td>
<td>5</td>
<td>0.1</td>
<td>0</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Metabolism and Nutrition Disorders**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased appetite</td>
<td>12</td>
<td>0.2</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dehydration</td>
<td>4</td>
<td>0.9</td>
<td>0.1</td>
<td>0.4</td>
<td>0.1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Musculoskeletal and Connective Tissue Disorders**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle spasms</td>
<td>11</td>
<td>0.1</td>
<td>0</td>
<td>3</td>
<td>0.1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Respiratory, Thoracic and Mediastinal Disorders**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Epistaxis</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Skin and Subcutaneous Tissue Disorders**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rash‡</td>
<td>18</td>
<td>0.6</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dry skin</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nail Disorder§</td>
<td>8</td>
<td>0.3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Skin fissures</td>
<td>2</td>
<td>0.1</td>
<td>0</td>
<td>0.1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* Includes abdominal pain, abdominal pain upper, and abdominal pain lower
† Includes stomatitis, aphthous stomatitis, mouth ulceration, oral mucosal blistering, mucosal inflammation, oropharyngeal pain, oral pain, glossodynia, glossitis, and cheilitis
‡ Includes rash, rash erythematous, rash follicular, rash generalized, rash pruritic, rash pustular, rash maculo-papular, rash papular, dermatitis, dermatitis acneform, and toxic skin eruption
§ Includes nail disorder, paronychia, onychoclasis, nail discoloration, nail toxicity, nail growth abnormal, and nail dystrophy

**Advanced or Metastatic Breast Cancer**

NALA

The data described below reflect the safety data of NERLYNX plus capecitabine in NALA, a randomized, multicenter, multinational, open-label, active-controlled study of HER2+ metastatic breast cancer in patients, with or without brain metastases, who have received two or more prior anti HER2-based regimens in the metastatic setting.

Patients were treated with NERLYNX 240 mg orally once daily Days 1–21 of a 21-day cycle in combination with capecitabine (750 mg/m² given orally twice daily) Days 1–14 of a 21-day cycle or lapatinib 1250 mg orally once daily Days 1–21 of a 21-day cycle in combination with capecitabine (1000 mg/m² given orally twice daily) Days 1–14 of a 21-day cycle until disease progression. The median duration of treatment was 5.7 months in the NERLYNX plus capecitabine arm and 4.4 months in the lapatinib plus capecitabine arm.
NERLYNX dose reduction due to an adverse reaction of any grade occurred in 10% of patients receiving NERLYNX plus capecitabine. Permanent discontinuation due to any adverse reaction was reported in 14% of NERLYNX plus capecitabine treated patients. The most common adverse reactions leading to discontinuation were vomiting (3.6%), diarrhea (2.6%), nausea (2.6%), and palmar-plantar erythrodyseaesthesia syndrome (2.3%) of NERLYNX plus capecitabine -treated patients.

The most common adverse reactions of any grade (≥5%) in the NERLYNX plus capecitabine arm were diarrhea, nausea, vomiting, decreased appetite, constipation, fatigue/asthenia, weight decreased, dizziness, back pain, arthralgia, urinary tract infection, upper respiratory tract infection, abdominal distention, renal impairment, and muscle spasms. The most frequently reported Grade 3 or 4 adverse reactions were diarrhea, nausea, vomiting, fatigue, and decreased appetite.

Serious adverse reactions ≥2% in the NERLYNX plus capecitabine arm included diarrhea (7%), vomiting (3%), nausea (2.3%), and acute kidney injury (2.3%).

Table 9 summarizes the adverse reactions in NALA.

Table 9: Adverse Reactions Reported in ≥2% of NERLYNX-Treated Patients in Combination with Capecitabine in NALA

<table>
<thead>
<tr>
<th>System Organ Class (Preferred Term)</th>
<th>NERLYNX plus capecitabine n=303</th>
<th>Lapatinib plus capecitabine n=311</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Grades (%)</td>
<td>Grade 3 (%)</td>
</tr>
<tr>
<td>Gastrointestinal Disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td>83</td>
<td>25</td>
</tr>
<tr>
<td>Nausea</td>
<td>53</td>
<td>4.3</td>
</tr>
<tr>
<td>Vomiting</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td>Constipation</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>8</td>
<td>0.3</td>
</tr>
<tr>
<td>General Disorders and Administration Site Conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue/asthenia</td>
<td>40</td>
<td>4.5</td>
</tr>
<tr>
<td>Malaise</td>
<td>4.3</td>
<td>0</td>
</tr>
<tr>
<td>Influenza like illness</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Infections and Infestations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>9</td>
<td>0.7</td>
</tr>
<tr>
<td>Upper respiratory tract infection</td>
<td>8</td>
<td>0.3</td>
</tr>
<tr>
<td>Investigations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight decreased</td>
<td>20</td>
<td>0.3</td>
</tr>
<tr>
<td>Metabolism and Nutrition Disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased appetite</td>
<td>35</td>
<td>2.6</td>
</tr>
<tr>
<td>Musculoskeletal and Connective Tissue Disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back Pain</td>
<td>10</td>
<td>0.3</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Muscle spasms</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Nervous System Disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dizziness</td>
<td>14</td>
<td>0.3</td>
</tr>
<tr>
<td>Renal and urinary disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal impairment*</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Dysuria</td>
<td>4.6</td>
<td>0</td>
</tr>
<tr>
<td>Investigations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight decreased</td>
<td>20</td>
<td>0.3</td>
</tr>
</tbody>
</table>

* Renal impairment includes acute kidney injury, blood creatinine increased, renal failure, and renal impairment
The CONTROL (NCT02400476) study was a multicenter, open-label, multi-cohort trial evaluating patients with early stage HER2-positive breast cancer treated with neratinib 240 mg daily for up to one year receiving loperamide prophylaxis with and without an additional anti-diarrheal treatment. All patients received loperamide 4 mg loading dose, followed by 4 mg three times a day from Days 1–14, followed by 4 mg twice a day on Days 15–56, followed by loperamide as needed through 1 year of treatment with neratinib [see Dosage and Administration (2.1)]. One cohort of patients received budesonide 9 mg once daily on cycle 1 Days 1–28, in addition to loperamide. At the interim analysis, the incidence of all grade diarrhea for patients receiving loperamide alone (n=109) was 78% compared to 86% of patients who received budesonide and loperamide (n=64). The incidence of Grade 2 diarrhea was 25% compared to 33%, respectively. The incidence of Grade 3 diarrhea was 32% compared to 28%, respectively. Diarrhea leading to treatment discontinuation occurred in 18% of patients treated with loperamide alone compared to 11% of the patients who received loperamide and budesonide.

7  
DRUG INTERACTIONS

7.1  
Effect of Other Drugs on NERLYNX

Table 10 includes drug interactions that affect the pharmacokinetics of neratinib.

Table 10: Drug Interactions That Affect Neratinib

<table>
<thead>
<tr>
<th>Clinical Impact</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gastric Acid Reducing Agents</strong></td>
<td>Concomitant use of NERLYNX with a proton pump inhibitor, H2-receptor antagonist, or antacid may decrease neratinib plasma concentration. Decreased neratinib AUC may reduce NERLYNX activity. Lansoprazole (PPI) resulted in a decrease of neratinib Cmax by 71% and AUC by 65% [see Clinical Pharmacology (12.3)].</td>
</tr>
<tr>
<td><strong>Prevention or Management</strong></td>
<td></td>
</tr>
<tr>
<td>• PPIs</td>
<td>Take NERLYNX at least 2 hours before the next dose of the H2-receptor antagonist or 10 hours after the H2-receptor antagonist [see Dosage and Administration (2.3)].</td>
</tr>
<tr>
<td>• H2-receptor antagonists</td>
<td></td>
</tr>
<tr>
<td>• Antacids</td>
<td>Separate NERLYNX dosing by 3 hours after antacids [see Dosage and Administration (2.3)].</td>
</tr>
</tbody>
</table>

**Strong CYP3A4 Inhibitors**

<table>
<thead>
<tr>
<th>Clinical Impact</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concomitant use of NERLYNX with a strong CYP3A4 inhibitor (ketoconazole) increased neratinib Cmax by 221% and AUC by 381% [see Clinical Pharmacology (12.3)].</td>
<td>Avoid concomitant use of NERLYNX with strong CYP3A4 inhibitors.</td>
</tr>
<tr>
<td>Concomitant use of NERLYNX with other strong CYP3A4 inhibitors may increase neratinib concentrations.</td>
<td></td>
</tr>
<tr>
<td>Increased neratinib concentrations may increase the risk of toxicity.</td>
<td></td>
</tr>
</tbody>
</table>
### Moderate CYP3A4 and P-gp Dual Inhibitors

<table>
<thead>
<tr>
<th>Clinical Impact</th>
<th>Prevention or Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Simulated concomitant use of NERLYNX with a moderate CYP3A4 and P-gp dual inhibitor (verapamil) suggest the neratinib C\text{max} and AUC may increase by 203% and 299%, respectively [see Clinical Pharmacology (12.3)].</td>
<td>Avoid concomitant use of NERLYNX with other moderate CYP3A4 and P-gp dual inhibitors.</td>
</tr>
<tr>
<td>• Concomitant use of NERLYNX with other moderate CYP3A4 and P-gp dual inhibitors may increase neratinib concentrations.</td>
<td></td>
</tr>
<tr>
<td>• Increased neratinib concentrations may increase the risk of toxicity.</td>
<td></td>
</tr>
</tbody>
</table>

### Strong or Moderate CYP3A4 Inducers

<table>
<thead>
<tr>
<th>Clinical Impact</th>
<th>Prevention or Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Concomitant use of NERLYNX with a strong CYP3A4 inducer (rifampin) reduced neratinib C\text{max} by 76% and AUC by 87% [see Clinical Pharmacology (12.3)].</td>
<td>Avoid concomitant use of NERLYNX with strong or moderate CYP3A4 inducers.</td>
</tr>
<tr>
<td>• Concomitant use of NERLYNX with other strong or moderate CYP3A4 inducers may decrease NERLYNX concentrations.</td>
<td></td>
</tr>
<tr>
<td>• Decreased neratinib AUC may reduce NERLYNX activity.</td>
<td></td>
</tr>
</tbody>
</table>

AUC=Area Under Curve; C\text{max}=Maximum Concentration

* These examples are a guide and not considered a comprehensive list of all possible drugs that may fit this category. The healthcare provider should consult appropriate references for comprehensive information.

### 7.2 Effect of NERLYNX on Other Drugs

**P-glycoprotein (P-gp) Substrates**

Concomitant use of NERLYNX with digoxin, a P-gp substrate, increased digoxin concentrations [see Clinical Pharmacology (12.3)]. Increased concentrations of digoxin may lead to increased risk of adverse reactions including cardiac toxicity. Refer to the digoxin prescribing information for dosage adjustment recommendations due to drug interactions. NERLYNX may inhibit the transport of other P-gp substrates (e.g., dabigatran, fexofenadine).

### 8 USE IN SPECIFIC POPULATIONS

#### 8.1 Pregnancy

**Risk Summary**

Based on findings from animal studies and the mechanism of action, NERLYNX can cause fetal harm when administered to a pregnant woman [see Clinical Pharmacology (12.1)].

There are no available data in pregnant women to inform the drug-associated risk. In animal reproduction studies, administration of neratinib to pregnant rabbits during organogenesis resulted in abortions, embryo-fetal death and fetal abnormalities in rabbits at maternal exposures (AUC) approximately 0.2 times exposures in patients at the recommended dose (see Data). Advise pregnant women of the potential risk to a fetus.

The background risk of major birth defects and miscarriage for the indicated population is unknown. However, the background risk of major birth defects is 2%–4% and of miscarriage is 15%–20% of clinically recognized pregnancies in the U.S. general population.
Data

Animal Data

In a fertility and early embryonic development study in female rats, neratinib was administered orally for 15 days before mating to Day 7 of pregnancy, which did not cause embryonic toxicity at doses up to 12 mg/kg/day in the presence of maternal toxicity. A dose of 12 mg/kg/day in rats is approximately 0.5 times the maximum recommended dose of 240 mg/day in patients on a mg/m² basis.

In an embryo-fetal development study in rats, pregnant animals received oral doses of neratinib up to 15 mg/kg/day during the period of organogenesis. No effects on embryo-fetal development or survival were observed. Maternal toxicity was evident at 15 mg/kg/day (approximately 0.6 times the AUC in patients receiving the maximum recommended dose of 240 mg/day).

In an embryo-fetal development study in rabbits, pregnant animals received oral doses of neratinib up to 9 mg/kg/day during the period of organogenesis. Administration of neratinib at doses ≥6 mg/kg/day resulted in maternal toxicity, abortions, and embryo-fetal death (increased resorptions). Neratinib administration resulted in increased incidence of fetal gross external (domed head), soft tissue (dilation of the brain ventricles and ventricular septal defect), and skeletal (misshapen anterior fontanels and enlarged anterior and/or posterior fontanels) abnormalities at ≥3 mg/kg/day. The AUC(0-t) at 6 mg/kg/day and 9 mg/kg/day in rabbits were approximately 0.5 and 0.8 times, respectively, the AUCs in patients receiving the maximum recommended dose of 240 mg/day.

In a peri- and postnatal development study in rats, oral administration of neratinib from gestation day 7 until lactation day 20 resulted in maternal toxicity at ≥10 mg/kg/day (approximately 0.4 times the maximum recommended dose of 240 mg/day in patients on a mg/m² basis) including decreased body weights, body weight gains, and food consumption. Effects on long-term memory were observed in male offspring at maternal doses ≥5 mg/kg/day (approximately 0.2 times the maximum recommended dose of 240 mg/day in patients on a mg/m² basis).

8.2 Lactation

Risk Summary

No data are available regarding the presence of neratinib or its metabolites in human milk or its effects on the breastfed infant or on milk production. Because of the potential for serious adverse reactions in breastfed infants from NERLYNX, advise lactating women not to breastfeed while taking NERLYNX and for at least 1 month after the last dose.

8.3 Females and Males of Reproductive Potential

Pregnancy

Based on animal studies, NERLYNX can cause fetal harm when administered to a pregnant woman [see Use in Specific Populations (8.1)]. Females of reproductive potential should have a pregnancy test prior to starting treatment with NERLYNX.

Contraception

Females

Based on animal studies, NERLYNX can cause fetal harm when administered to a pregnant woman [see Use in Specific Populations (8.1)]. Advise females of reproductive potential to use effective contraception during treatment with NERLYNX and for at least 1 month after the last dose.
Males

Based on findings in animal reproduction studies, advise male patients with female partners of reproductive potential to use effective contraception during treatment and for 3 months after the last dose of NERLYNX [see Use in Specific Populations (8.1)].

8.4 Pediatric Use

The safety and efficacy of NERLYNX in pediatric patients has not been established.

8.5 Geriatric Use

In the ExteNET trial, in the NERLYNX arm; 1236 patients were <65 years, 172 patients were ≥65 years, of whom 25 patients were 75 years or older. There was a higher frequency of treatment discontinuations due to adverse reactions in the ≥65 years age group than in the <65 years age group; in the NERLYNX arm, the percentages were 45% compared with 25%, respectively, and in the placebo arm 6% and 5%, respectively. The incidence of serious adverse reactions in the NERLYNX arm vs placebo arm was 7% vs 6% (<65 years old) and 10% vs 8% (≥65 years old). The serious adverse reactions most frequently reported in the ≥65 years old group were vomiting (2.3%), diarrhea (1.7%), renal failure (1.7%), and dehydration (1.2%).

In the NALA trial, in the NERLYNX plus capecitabine arm; 242 patients were <65 years, 61 patients were ≥65 years, of whom 12 patients were 75 years or older. The incidence of serious adverse reactions in the NERLYNX plus capecitabine arm in the ≥65 years age group was 36% and in the <65 years age group was 34%. The serious adverse reactions most frequently reported in the ≥65 years-old group were diarrhea (16%), acute kidney injury (8%), and dehydration (7%). No overall differences in effectiveness were observed between patients ≥65 years old and patients <65 years old.

8.6 Hepatic Impairment

No dose modifications are recommended for patients with mild to moderate hepatic impairment (Child Pugh A or B). Patients with severe, pre-existing hepatic impairment (Child Pugh Class C) experienced a reduction in neratinib clearance and an increase in Cmax and AUC. Reduce the NERLYNX dosage for patients with severe hepatic impairment. [see Dosage and Administration (2.3) and Clinical Pharmacology (12.3)].

10 OVERDOSAGE

There is no specific antidote, and the benefit of hemodialysis in the treatment of NERLYNX overdose is unknown. In the event of an overdose, administration should be withheld and general supportive measures undertaken.

In the clinical trial setting, a limited number of patients reported overdose. The adverse reactions experienced by these patients were diarrhea, nausea, vomiting, and dehydration. The frequency and severity of gastrointestinal disorders (diarrhea, abdominal pain, nausea and vomiting) appear to be dose related.

11 DESCRIPTION

NERLYNX (neratinib) immediate release, film-coated tablets for oral administration contain 40 mg of neratinib, equivalent to 48.31 mg neratinib maleate. Neratinib is a member of the 4-anilino quinolidine class of protein kinase inhibitors. The molecular formula for neratinib maleate is C30H29ClN6O3•C4H4O4 and the molecular weight is 673.11 Daltons. The chemical name is (E)-N-\{4-[3-chloro-4-(pyridin-2-yl methoxy)anilino]-3-cyano-7-ethoxyquinolin-6-yl}\}•4-(dimethylamino)but-2-enamide maleate, and its structural formula is:
Neratinib maleate is an off-white to yellow powder with pKₐs of 7.65 and 4.66. The solubility of neratinib maleate increases dramatically as neratinib becomes protonated at acidic pH. Neratinib maleate is sparingly soluble at pH 1.2 (32.90 mg/mL) and insoluble at approximate pH 5.0 and above (0.08 mg/mL or less).

Inactive ingredients: Tablet Core: colloidal silicon dioxide, mannitol, microcrystalline cellulose, crospovidone, povidone, magnesium stearate, and purified water. Coating: red film coat: polyvinyl alcohol, titanium dioxide, polyethylene glycol, talc, and iron oxide red.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Neratinib is an intracellular kinase inhibitor that irreversibly binds to epidermal growth factor receptor (EGFR), HER2, and HER4. In vitro, neratinib reduces EGFR and HER2 autophosphorylation, downstream MAPK and AKT signaling pathways, and showed antitumor activity in EGFR and/or HER2 expressing carcinoma cell lines. Neratinib human metabolites M3, M6, M7 and M11 inhibited the activity of EGFR, HER2, and HER4 in vitro. In vivo, oral administration of neratinib inhibited tumor growth in mouse xenograft models with tumor cell lines expressing HER2 and EGFR.

12.2 Pharmacodynamics

Cardiac Electrophysiology

The effect of NERLYNX on the QTc interval was evaluated in a randomized, placebo, and positive-controlled, double-blind, single-dose, crossover study in 60 healthy subjects. At 140% the therapeutic exposures of NERLYNX, there was no clinically relevant effect on the QTc interval.

12.3 Pharmacokinetics

Neratinib exhibits a non-linear PK profile with less than dose proportional increase of AUC with the increasing daily dose over the range of 40 to 400 mg.

Absorption

The neratinib and major active metabolites M3, M6 and M7 peak concentrations are reached in the range of 2 to 8 hours after oral administration.

Effect of Food

The food-effect assessment was conducted in healthy volunteers who received NERLYNX 240 mg under fasting conditions and with high-fat food (approximately 55% fat, 31% carbohydrate, and 14% protein) or standard breakfast (approximately 50% carbohydrate, 35% fat, and 15% protein). A high-fat meal increased neratinib Cₘₐₓ and AUCₘₐₓ by 70% (90% CI: 1.1–2.7) and 120% (90% CI: 1.4–3.5), respectively. A standard breakfast increased the Cₘₐₓ and AUCₘₐₓ by 20% (90% CI: 0.97–1.42) and 10% (90% CI: 1.02–1.24), respectively [see Dosage and Administration (2.2)].
Distribution

In patients, following multiple doses of NERLYNX, the mean (%CV) apparent volume of distribution at steady-state (Vss/F) was 6433 (19%) L. In vitro protein binding of neratinib in human plasma was greater than 99% and independent of concentration. Neratinib bound predominantly to human serum albumin and human alpha-1 acid glycoprotein.

Elimination

Following 7 days of daily 240 mg oral doses of NERLYNX in healthy subjects, the mean (%CV) plasma half-life of neratinib, M3, M6, and M7 was 14.6 (38%), 21.6 (77%), 13.8 (50%) and 10.4 (33%) hours, respectively. The mean elimination half-life of neratinib ranged from 7 to 17 hours following a single oral dose in patients. Following multiple doses of NERLYNX at once-daily 240 mg in cancer patients, the mean (%CV) CL/F after first dose and at steady state (day 21) were 216 (34%) and 281 (40%) L/hour, respectively.

Metabolism

Neratinib is metabolized primarily in the liver by CYP3A4 and to a lesser extent by flavin-containing monooxygenase (FMO).

After oral administration of NERLYNX, neratinib represents the most prominent component in plasma. At steady state after 240 mg daily oral doses of NERLYNX in a healthy subject study (n=25), the systemic exposures (AUC) of the active metabolites M3, M6, M7 and M11 were 15%, 33%, 22% and 4% of the systemic neratinib exposure (AUC) respectively.

Excretion

After oral administration of 200 mg (0.83 times of approved recommended dosage) radiolabeled neratinib oral formulation, fecal excretion accounted for approximately 97% and urinary excretion accounted for 1.1% of the total dose. Sixty-one percent of the excreted radioactivity was recovered within 96 hours and 98% was recovered after 10 days.

Specific Populations

Age, gender, race, and renal function do not have a clinically significant effect on neratinib pharmacokinetics.

Patients With Hepatic Impairment

Neratinib is mainly metabolized in the liver. Single doses of 120 mg NERLYNX were evaluated in non-cancer patients with chronic hepatic impairment (n=6 each in Child Pugh Class A, B, and C) and in healthy subjects (n=9) with normal hepatic function. Neratinib exposures in the patients with Child Pugh Class A (mild impairment) and Child Pugh Class B (moderate impairment) were similar to that in normal healthy volunteers. Patients with severe hepatic impairment (Child Pugh Class C) had neratinib Cmax and AUC increased by 173% and 181%, respectively, as compared to the normal hepatic function controls [see Dosage and Administration (2.3) and Use in Specific Populations (8.6)].

Drug Interaction Studies

Gastric Acid Reducing Agents: NERLYNX solubility decreases with increasing GI tract pH values. Drugs that alter the pH values of the GI tract may alter the solubility of neratinib and hence its absorption and systemic exposure. When multiple doses of lansoprazole (30 mg daily), a proton pump inhibitor, were co-administered with a single 240 mg oral dose of NERLYNX, the neratinib Cmax and AUC decreased by 71% and 65%, respectively. When a single oral dose of 240 mg NERLYNX was administered 2 hours following a daily dose of 300 mg ranitidine, an H2 receptor antagonist, the neratinib Cmax and AUC were reduced by 57% and 48%, respectively. When a single oral dose of 240 mg NERLYNX was administered 2 hours prior to 150 mg ranitidine twice daily (administered in the morning and evening, approximately 12 hours apart), the neratinib Cmax and AUC were reduced by 44% and 32%, respectively [see Dosage and Administration (2.3) and Drug Interactions (7.1)].

Reference ID: 4648556
**Strong CYP3A4 inhibitors:** Concomitant use of ketoconazole (400 mg once-daily for 5 days), a strong inhibitor of CYP3A4 and an inhibitor of P-gp, with a single oral 240 mg NERLYNX dose in healthy subjects (n=24) increased neratinib C\(_{\text{max}}\) by 221% and AUC by 381% [see Drug Interactions (7.1)].

**Moderate CYP3A4 and P-gp dual Inhibitors:** Simulations using physiologically based pharmacokinetic (PBPK) models suggested that a moderate CYP3A4 and P-gp dual inhibitor (verapamil) may increase the C\(_{\text{max}}\) and AUC of neratinib by 203% and 299%, respectively [see Drug Interactions (7.1)].

**Moderate CYP3A4 inhibitors:** Simulations using PBPK models suggested that a moderate CYP3A4 inhibitor (fluconazole) may increase the C\(_{\text{max}}\) and AUC of neratinib by 30% and 68%, respectively.

**Strong and Moderate CYP3A4 Inducers:** Concomitant use of rifampin, a strong inducer of CYP3A4, with a single oral 240 mg NERLYNX dose in healthy subjects (n=24) reduced neratinib C\(_{\text{max}}\) by 76% and AUC by 87%. The AUC of active metabolites M6 and M7 were also reduced by 37–49% when compared to NERLYNX administered alone. Simulations using PBPK models suggested that a moderate CYP3A4 inducer (efavirenz) may decrease the C\(_{\text{max}}\) and AUC of neratinib by 36% and 52%, respectively [see Drug Interactions (7.1)].

**Effect of NERLYNX on P-gp Transporters:** Concomitant use of digoxin (a single 0.5 mg oral dose), a P-gp substrate, with multiple oral doses of NERLYNX 240 mg in healthy subjects (n=18) increased the mean digoxin C\(_{\text{max}}\) by 54% and AUC by 32% [see Drug Interactions (7.2)].

### 13 NONCLINICAL TOXICOLOGY

#### 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

A two-year carcinogenicity study was conducted in rats at oral neratinib doses of 1, 3, and 10 mg/kg/day. Neratinib was not carcinogenic in male and female rats at exposure levels >25 times the AUC in patients receiving the maximum recommended dose of 240 mg/day. Neratinib was not carcinogenic in a 26-week study in Tg.rasH2 transgenic mice when administered daily by oral gavage at doses up to 50 mg/kg/day in males and 125 mg/kg/day in females.

Neratinib was not mutagenic in an *in vitro* bacterial reverse mutation (AMES) assay or clastogenic in an *in vitro* human lymphocyte chromosomal aberration assay or an *in vivo* rat bone marrow micronucleus assay.

In a fertility study in rats, neratinib administration up to 12 mg/kg/day (approximately 0.5 times the maximum recommended dose of 240 mg/day in patients on a mg/m\(^2\) basis) caused no effects on mating or the ability of animals to become pregnant. In repeat-dose toxicity studies in dogs with oral administration of neratinib daily for up to 39 weeks, tubular hypoplasia of the testes was observed at ≥0.5 mg/kg/day. This finding was observed at AUCs that were approximately 0.4 times the AUC in patients at the maximum recommended dose of 240 mg.

### 14 CLINICAL STUDIES

#### 14.1 Extended Adjuvant Treatment of Early Stage Breast Cancer

The safety and efficacy of NERLYNX were investigated in the ExteNET trial (NCT00878709), a multicenter, randomized, double-blind, placebo-controlled study of NERLYNX after adjuvant treatment with a trastuzumab based therapy in women with HER2-positive breast cancer.

A total of 2840 patients with early-stage (Stage 1 to 3c) HER2-positive breast cancer within two years of completing treatment with adjuvant trastuzumab was randomized to receive either NERLYNX (n=1420) or placebo (n=1420). Randomization was stratified by the following factors: hormone receptor status, nodal status (0, 1–3 vs 4 or more positive nodes) and whether trastuzumab was given sequentially versus concurrently with chemotherapy. NERLYNX 240 mg or placebo was given orally once daily for one year. The major efficacy outcome measure was invasive disease-free survival (iDFS) defined as the time between the date of
randomization to the first occurrence of invasive recurrence (local/regional, ipsilateral, or contralateral breast cancer), distant recurrence, or death from any cause, with 2 years and 28 days of follow-up.

Patient demographics and tumor characteristics were generally balanced between treatment arms. Patients had a median age of 52 years (range 23 to 83) and 12% of patients were 65 or older. The majority of patients were White (81%), and most patients (99.7%) had an ECOG performance status of 0 or 1. Fifty-seven percent (57%) of patients had hormone receptor positive disease (defined as ER-positive and/or PR-positive), 24% were node negative, 47% had one to three positive nodes and 30% had four or more positive nodes. Ten percent (10%) of patients had Stage I disease, 41% had Stage II disease and 31% had Stage III disease. The majority of patients (81%) were enrolled within one year of completion of trastuzumab treatment. Median time from the last adjuvant trastuzumab treatment to randomization was 4.4 months in the NERLYNX arm versus 4.6 months in the placebo arm. Median duration of treatment was 11.6 months in the NERLYNX arm vs 11.8 months in the placebo arm.

The efficacy results from the ExteNET trial are summarized in Table 11 and Figure 1.

Table 11: Efficacy iDFS Results for the ITT Population

<table>
<thead>
<tr>
<th>Number of Events/Total N (%)</th>
<th>iDFS at 24 months, % (95% CI)</th>
<th>Stratified† HR (95% CI)</th>
<th>P-value‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>NERLYNX 67/1420 (4.7)</td>
<td>94.2 (92.6, 95.4)</td>
<td>0.66 (0.49, 0.90)</td>
<td>0.008</td>
</tr>
<tr>
<td>Placebo 106/1420 (7.5)</td>
<td>91.9 (90.2, 93.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CI= Confidence Interval; HR= Hazard Ratio; iDFS= Invasive Disease Free-Survival; ITT= Intent to Treat
* Kaplan-Meier estimate
† Stratified by prior trastuzumab (concurrent vs sequential), nodal status (0–3 positive nodes vs ≥4 positive nodes), and ER/PR status (positive vs negative)
‡ Stratified log-rank test

Figure 1: iDFS in the ExteNET Trial - ITT Population
Table 12: Subgroup Analyses*

<table>
<thead>
<tr>
<th>Population</th>
<th>Number of Events/Total N (%)</th>
<th>iDFS at 24 Months, † % (95% CI)</th>
<th>Unstratified HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NERLYNX</td>
<td>Placebo</td>
<td>NERLYNX</td>
</tr>
<tr>
<td><strong>Hormone Receptor Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>29/816</td>
<td>63/815</td>
<td>95.6</td>
</tr>
<tr>
<td></td>
<td>(3.6)</td>
<td>(7.7)</td>
<td>(93.8, 96.9)</td>
</tr>
<tr>
<td>Negative</td>
<td>38/604</td>
<td>43/605</td>
<td>92.2</td>
</tr>
<tr>
<td></td>
<td>(6.3)</td>
<td>(7.1)</td>
<td>(89.4, 94.3)</td>
</tr>
<tr>
<td><strong>Nodal Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>7/335</td>
<td>11/336</td>
<td>97.2</td>
</tr>
<tr>
<td></td>
<td>(2.1)</td>
<td>(3.3)</td>
<td>(94.1, 98.7)</td>
</tr>
<tr>
<td>1–3 Positive Nodes</td>
<td>31/664</td>
<td>47/664</td>
<td>94.4</td>
</tr>
<tr>
<td></td>
<td>(4.7)</td>
<td>(7.1)</td>
<td>(92.2, 96.1)</td>
</tr>
<tr>
<td>≥4 Positive Nodes</td>
<td>29/421</td>
<td>48/420</td>
<td>91.4</td>
</tr>
<tr>
<td></td>
<td>(6.9)</td>
<td>(11.4)</td>
<td>(87.9, 94.0)</td>
</tr>
<tr>
<td><strong>Prior Trastuzumab</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concurrent</td>
<td>49/884</td>
<td>66/886</td>
<td>93.2</td>
</tr>
<tr>
<td></td>
<td>(5.5)</td>
<td>(7.4)</td>
<td>(91.0, 94.8)</td>
</tr>
<tr>
<td>Sequential</td>
<td>18/536</td>
<td>40/534</td>
<td>95.8</td>
</tr>
<tr>
<td></td>
<td>(3.4)</td>
<td>(7.5)</td>
<td>(93.4, 97.3)</td>
</tr>
<tr>
<td><strong>Completion of Prior Trastuzumab</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤1 year</td>
<td>58/1152</td>
<td>95/1145</td>
<td>93.8</td>
</tr>
<tr>
<td></td>
<td>(5.0)</td>
<td>(8.3)</td>
<td>(92.0, 95.2)</td>
</tr>
<tr>
<td>1–2 years</td>
<td>9/262</td>
<td>11/270</td>
<td>95.8</td>
</tr>
<tr>
<td></td>
<td>(3.4)</td>
<td>(4.1)</td>
<td>(92.0, 97.8)</td>
</tr>
</tbody>
</table>

CI=Confidence Interval; HR=Hazard Ratio
* Exploratory analyses without adjusting multiple comparisons
† Kaplan-Meier estimate

Approximately 75% of patients were re-consented for extended follow-up beyond 24 months. Observations with missing data were censored at the last date of assessment. This exploratory analysis suggests that the iDFS results at 5 years are consistent with the 2-year iDFS results observed in ExteNET. After a median follow-up of 8 years, there was no statistically significant difference in OS between the NERLYNX and the placebo arm [HR 0.95 (95% CI: 0.75, 1.21)]. The 5-year estimate of OS was 94.1% (95% CI, 92.7%, 95.3%) in the NERLYNX arm and 93.3% (95% CI, 91.8%, 94.5%) in the placebo arm.
14.2  Advanced or Metastatic Breast Cancer

The safety and efficacy of NERLYNX in combination with capecitabine was studied in NALA (NCT01808573), a randomized, multicenter, open-label clinical trial in patients (n=621) with metastatic HER2 positive breast cancer who had received 2 or more prior anti-HER2 based regimens in the metastatic setting. HER2 expression was based on archival tissue tested at a central laboratory prior to enrollment. HER2 positivity was defined as a HER2 immunohistochemistry (IHC) score of 3+ or IHC 2+ with confirmatory in situ hybridization (ISH) positive. Fifty-nine percent of these patients were hormone receptor positive (HR+) and 41% were hormone receptor negative (HR-); 69% had received two prior anti-HER2 based regimens, 31% had received three or more prior anti-HER2 based regimens, 81% had visceral disease, and 19% had non-visceral-only disease. Patients with asymptomatic or stable brain metastases were included in NALA trial (16%).

Patients were randomized (1:1) to receive NERLYNX 240 mg orally once daily on Days 1–21 in combination with capecitabine 750 mg/m² given orally twice daily on Days 1–14 for each 21–day cycle (n=307) or lapatinib 1250 mg orally once daily Days 1–21 in combination with capecitabine 1000 mg/m² given orally twice daily on Days 1-14 for each 21-day cycle (n=314). Patients were treated until disease progression or unacceptable toxicity.

The efficacy results from the NALA trial are summarized in Table 13, Figure 2, and Figure 3.

Table 13. Efficacy Results – NALA Trial (Central Assessment)

<table>
<thead>
<tr>
<th></th>
<th>NERLYNX + Capecitabine (n=307)</th>
<th>Lapatinib + Capecitabine (n=314)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Progression Free Survival (PFS)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Events (%)</td>
<td>210 (68.4)</td>
<td>223 (71.0)</td>
</tr>
<tr>
<td>Median PFS, months (95% CI)</td>
<td>5.6 (4.9, 6.9)</td>
<td>5.5 (4.3, 5.6)</td>
</tr>
<tr>
<td>HR (95% CI)*</td>
<td>0.76 (0.63,0.93)</td>
<td></td>
</tr>
<tr>
<td>p-value†</td>
<td>0.0059</td>
<td></td>
</tr>
<tr>
<td>PFS rates at 12 months, % (95% CI)α</td>
<td>29 (23, 35)</td>
<td>15 (10, 20)</td>
</tr>
<tr>
<td>PFS rates at 24 months, % (95% CI)β·α</td>
<td>12 (7, 18)</td>
<td>3 (1, 8)</td>
</tr>
<tr>
<td><strong>Overall Survival (OS)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Events (%)</td>
<td>192 (62.5)</td>
<td>218 (69.4)</td>
</tr>
<tr>
<td>Median OS, months (95% CI)</td>
<td>21.0 (17.7, 23.8)</td>
<td>18.7 (15.5, 21.2)</td>
</tr>
<tr>
<td>HR (95% CI)*</td>
<td>0.88 (0.72, 1.07)</td>
<td></td>
</tr>
<tr>
<td>p-value†</td>
<td>0.2086</td>
<td></td>
</tr>
<tr>
<td><strong>Objective Response Rate (ORR)§</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORR, % (95% CI)</td>
<td>32.8 (27.1, 38.9)</td>
<td>26.7 (21.5, 32.4)</td>
</tr>
<tr>
<td><strong>Duration of Response (DOR)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median DOR, months (95% CI)</td>
<td>8.5 (5.6, 11.2)</td>
<td>5.6 (4.2, 6.4)</td>
</tr>
</tbody>
</table>

HR=Hazard Ratio
*  Hazard ratio is presented as NERLYNX plus Capecitabine (N+C) vs Lapatinib plus Capecitabine (L+C).
†  Stratified log-rank test
‡  The total number of patients remaining on study at 24 months is 11; with 9 patients on N+C and 2 patients on L+C.
α Explanatory analysis
§  Confirmed ORR
Figure 2. Progression Free Survival (Central Assessment - ITT Population)

Survival Rates (95% CI)
29% (23%, 35%)
15% (10%, 20%)
12% (7%, 18%)
3% (1%, 8%)

Number of Patients at Risk

<table>
<thead>
<tr>
<th></th>
<th>N+C</th>
<th>L+C</th>
</tr>
</thead>
<tbody>
<tr>
<td>36mos</td>
<td>307</td>
<td>314</td>
</tr>
<tr>
<td>18mos</td>
<td>183</td>
<td>183</td>
</tr>
<tr>
<td>12mos</td>
<td>113</td>
<td>82</td>
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<tr>
<td>9mos</td>
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<td>6mos</td>
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<td>0.5mos</td>
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<tr>
<td></td>
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<td>1</td>
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</table>
Table 14. Progression-Free Survival Rates - Subgroup Analyses

<table>
<thead>
<tr>
<th>Population</th>
<th>Number of Events/Total N (%)</th>
<th>PFS Rates (%) at 12 Months (95% CI)</th>
<th>NERLYNX + Capecitabine</th>
<th>Lapatinib + Capecitabine</th>
<th>NERLYNX + Capecitabine</th>
<th>Lapatinib + Capecitabine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Disease Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visceral</td>
<td>181/247 (73.3)</td>
<td>185/253 (73.1)</td>
<td>23 (17, 30)</td>
<td>14 (10, 20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Visceral</td>
<td>29/60 (48.3)</td>
<td>38/61 (62.3)</td>
<td>53 (38, 66)</td>
<td>18 (7, 32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hormone Receptor Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>128/181 (70.7)</td>
<td>115/186 (61.8)</td>
<td>27 (19, 34)</td>
<td>23 (15, 31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>82/126 (65.1)</td>
<td>108/128 (84.4)</td>
<td>32 (23, 41)</td>
<td>5 (2, 11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous HER2 regimens</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>2 regimens</td>
<td>148/215 (68.8)</td>
<td>151/215 (70.2)</td>
<td>26 (20, 33)</td>
<td>13 (8, 19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥3 regimens</td>
<td>62/92 (67.4)</td>
<td>72/99 (72.7)</td>
<td>34 (24, 45)</td>
<td>19 (11, 29)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

α Exploratory Analysis
16 HOW SUPPLIED/STORAGE AND HANDLING

NERLYNX 40 mg film-coated tablets are red, oval shaped and debossed with ‘W104’ on one side and plain on the other side.

NERLYNX is available in:

- Bottles of 180 tablets: NDC 70437-240-18
- Bottles of 126 tablets: NDC 70437-240-26

Store at controlled room temperature, 20°C to 25°C (68°F to 77°F); excursions permitted to 15°C to 30°C (59°F to 86°F) [see USP Controlled Room Temperature].

17 PATIENT COUNSELING INFORMATION

Advise the patient to read the FDA-approved patient labeling (Patient Information).

Diarrhea

- Inform patients that NERLYNX has been associated with diarrhea, which may be severe in some cases.
- Advise patients to initiate antidiarrheal prophylaxis with the first dose of NERLYNX.
- Instruct patients to maintain 1–2 bowel movements per day and on how to use antidiarrheal treatment regimens.
- Advise patients to inform their healthcare provider immediately if severe (≥Grade 3) diarrhea or diarrhea associated with weakness, dizziness, or fever occurs during treatment with NERLYNX [see Dosage and Administration (2.1) and Warnings and Precautions (5.1)].

Hepatotoxicity

- Inform patients that NERLYNX has been associated with hepatotoxicity which may be severe in some cases.
- Inform patients that they should report signs and symptoms of liver dysfunction to their healthcare provider immediately [see Warnings and Precautions (5.2)].

Embryo-Fetal Toxicity

- Advise females to inform their healthcare provider if they are pregnant or become pregnant. Inform female patients of the risk to a fetus and potential loss of the pregnancy [see Use in Specific Populations (8.1)].
- Advise females of reproductive potential to use effective contraception during treatment and for 1 month after receiving the last dose of NERLYNX [see Warnings and Precautions (5.3) and Use in Specific Populations (8.1, 8.3)].
- Advise lactating women not to breastfeed during treatment with NERLYNX and for at least 1 month after the last dose [see Use in Specific Populations (8.2)].

Drug Interactions

- NERLYNX may interact with many drugs; therefore, advise patients to report to their healthcare provider the use of any other prescription or nonprescription medication or herbal products [see Dosage and Administration (2.3) and Clinical Pharmacology (12.3)].
- NERLYNX may interact with gastric acid reducing agents. Advise patients to avoid concomitant use of proton pump inhibitors. When patients require gastric acid reducing agents, use an H2-receptor antagonist or
antacid. Advise patients to separate the dosing of NERLYNX by 3 hours after antacid medicine, and to take NERLYNX at least 2 hours before or 10 hours after a H2-receptor antagonist [see Dosage and Administration (2.3) and Drug Interactions (7.1)].

- NERLYNX may interact with grapefruit. Advise patients to avoid taking NERLYNX with grapefruit products [see Drug Interactions (7.1)].

Dosing and Administration

- For patients undergoing extended adjuvant treatment for early stage breast cancer, instruct patients to take NERLYNX with food at approximately the same time each day consecutively until disease recurrence or for up to one year.

- For patients treatment for metastatic breast cancer, instruct patients to take NERLYNX with food on days 1–21 of a 21-day cycle with capecitabine on Days 1–14 of a 21-day cycle until disease progression or unacceptable toxicities.

- If a patient misses a dose, instruct the patient not to replace the missed dose, and to resume NERLYNX with the next scheduled daily dose [see Dosage and Administration (2.2)].
What is the most important information I should know about NERLYNX?

NERLYNX may cause serious side effects, including:

- **Diarrhea.** Diarrhea is a common side effect of NERLYNX, but it can also be severe. You may lose too much body salts and fluid, and get dehydrated. When you start NERLYNX, your healthcare provider should prescribe the medicine loperamide for you during your first 2 months (56 days) of NERLYNX and then as needed. Be sure that your healthcare provider prescribes anti-diarrheals with NERLYNX. Anti-diarrheals must be started with the first dose of NERLYNX. To help prevent or reduce diarrhea:
  - You should start taking loperamide with your first dose of NERLYNX.
  - Keep taking loperamide during the first 2 months (56 days) of NERLYNX treatment and then as needed. Your healthcare provider will tell you exactly how much and how often to take this medicine.
  - Your healthcare provider may also need to give you other medicines to manage diarrhea when you start treatment with NERLYNX. Follow your healthcare provider's instructions on how to use these anti-diarrheal medicines.
  - Always take anti-diarrheals exactly as your healthcare provider tells you.
  - While taking anti-diarrheals, you and your healthcare provider should try to keep the number of bowel movements that you have at 1 or 2 bowel movements each day.
  - Tell your healthcare provider if you have more than 2 bowel movements in 1 day, or you have diarrhea that does not go away.
  - **Call your healthcare provider right away, as instructed, if you have severe diarrhea or if you have diarrhea along with weakness, dizziness, or fever.**
  - After 2 months (56 days) of treatment with NERLYNX, follow your healthcare provider's instructions about taking loperamide as needed to control diarrhea.

Your healthcare provider may change your dose of NERLYNX, temporarily stop or completely stop NERLYNX if needed to manage your diarrhea.

See "What are the possible side effects of NERLYNX?" for more information about side effects.

What is NERLYNX?

- NERLYNX is a prescription medicine used alone to treat adults with early-stage human epidermal growth factor receptor 2 (HER2)-positive breast cancer and who have previously been treated with trastuzumab-based therapy.
- NERLYNX is also used with a medicine called capecitabine to treat adults with HER2-positive breast cancer that has spread to other parts of the body (metastatic) and who have received 2 or more anti-HER2 therapy medicines for metastatic breast cancer.

It is not known if NERLYNX is safe and effective in children.

Before taking NERLYNX, tell your healthcare provider about all of your medical conditions, including if you:

- have liver problems. You may need a lower dose of NERLYNX.
- are pregnant or plan to become pregnant. NERLYNX can harm your unborn baby. If you are a female who can become pregnant:
  - Your healthcare provider should do a pregnancy test before you start taking NERLYNX.
  - You should use effective birth control (contraception) during treatment and for at least 1 month after your last dose of NERLYNX.
  - Talk with your healthcare provider about forms of birth control that you can use during this time.
  - Tell your healthcare provider right away if you become pregnant during treatment with NERLYNX.
  - Males with female partners who can become pregnant should use effective birth control during treatment and for 3 months after the last dose of NERLYNX.
- are breastfeeding or plan to breastfeed. It is not known if NERLYNX passes into your breast milk. Do not breastfeed during treatment and for at least 1 month after your last dose of NERLYNX.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. Especially tell your healthcare provider if you take medicines used to decrease stomach acid, called proton pump inhibitors or PPIs. You should avoid taking these medicines during treatment with NERLYNX.

How should I take NERLYNX?

- Take NERLYNX exactly as your healthcare provider tells you to take it.
• Your healthcare provider may change your dose of NERLYNX if needed.
• Take NERLYNX with food.
• Take NERLYNX at about the same time each day.
• Swallow NERLYNX tablets whole. Do not chew, crush, or split NERLYNX tablets.
• If you take an antacid medicine, take NERLYNX 3 hours after the antacid medicine.
• If you take an acid reducer (H₂ receptor blocker), NERLYNX should be taken at least 2 hours before or 10 hours after you take these medicines.
• NERLYNX is usually taken for 1 year.
• If you miss a dose of NERLYNX, skip that dose and take your next dose at your regular scheduled time.
• If you take too much NERLYNX, call your healthcare provider right away or go to the nearest hospital emergency room.

What should I avoid while taking NERLYNX?
You should avoid eating products that contain grapefruit during treatment with NERLYNX.

What are the possible side effects of NERLYNX?
NERLYNX may cause serious side effects, including:
See “What is the most important information I should know about NERLYNX?”

• Liver problems. Changes in liver function tests are common with NERLYNX. Your healthcare provider should do blood tests before you begin treatment, monthly during the first 3 months, and then every 3 months as needed during treatment with NERLYNX. Your healthcare provider will stop your treatment with NERLYNX if your liver tests show severe problems. Call your healthcare provider right away if you get any of the following signs or symptoms of liver problems:
  o tiredness
  o nausea
  o vomiting
  o pain in the right upper stomach-area (abdomen)
  o fever
  o rash
  o itching
  o yellowing of your skin or whites of your eyes

The most common side effects of NERLYNX when used alone include:
• diarrhea
• nausea
• stomach-area (abdomen) pain
• tiredness
• vomiting
• rash
• dry or inflamed mouth, or mouth sores
• decreased appetite
• muscle spasms
• upset stomach
• nail problems including color change
• dry skin
• swelling of your stomach-area
• nosebleed
• weight loss
• urinary tract infection

The most common side effects of NERLYNX when used with capecitabine include:
• diarrhea
• nausea
• vomiting
• decreased appetite
• constipation
• tiredness/weakness
• weight loss
• dizziness
• back pain
• joint pain
• urinary tract infection
• upper respiratory tract infection
• swelling of your stomach-area
• kidney problems
• muscle spasms

These are not all of the possible side effects of NERLYNX. For more information, ask your Healthcare Provider. Tell your doctor if you have any side effects that bother you or that does not go away. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

How should I store NERLYNX?
• Store NERLYNX at room temperature between 68°F to 77°F (20°C to 25°C).

Keep NERLYNX and all medicines out of the reach of children.

General information about the safe and effective use of NERLYNX.
Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use NERLYNX for a condition for which it was not prescribed. Do not give NERLYNX to other people, even if they have the same symptoms that you have. It may harm them. You can ask your pharmacist or healthcare provider for information about NERLYNX that is written for health professionals.

What are the ingredients in NERLYNX?
Active ingredient: neratinib
Inactive ingredients: Tablet Core: colloidal silicon dioxide, mannitol, microcrystalline cellulose, crospovidone, povidone, magnesium stearate, and purified water. Coating: red film coat: polyvinyl alcohol, titanium dioxide, polyethylene glycol, talc, and iron oxide red.

Manufactured for: Puma Biotechnology, Inc. 10880 Wilshire Blvd., Suite 2150 Los Angeles, CA 90024-4106

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For more information, go to www.NERLYNX.com or call 1-844-637-5969.

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