

# ABACAVIR HYPERSENSITIVITY REACTION

Abacavir is a component of **Ziagen®**,  
**Trizivir®**, **Kivexa®** and **Triumeq®** ▼

Version 2.0, March 2016

▼ In the EU, this medicinal product (Triumeq) is subject to additional monitoring

Zinc code: MLT\_GIB/HIV/0001/13(2)  
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# Aim

- The Abacavir Hypersensitivity Reaction (ABC HSR) educational programme is a global risk minimisation measure that has the following aims:
  - Maintaining low morbidity and mortality from ABC HSR in general, and to minimise the risk of ABC rechallenge in patients with clinically suspected HSR, regardless of HLA-B\*5701 status.
  - Increase understanding and awareness of ABC HSR by Healthcare professionals (HCPs) and expand on the information already included in the product labels.

# Key Risk Minimisation Points: Abacavir Hypersensitivity Reaction (HSR)

- Abacavir is associated with a risk for hypersensitivity reactions (HSR) characterised by fever and/or rash with other symptoms indicating multi-organ involvement.
  - Symptoms usually appear within the first 6 weeks although the reaction may occur at any time during therapy.
- Risk of abacavir HSR is higher for patients who test positive for the HLA-B\*5701 allele. However, abacavir HSRs have been reported at a lower frequency in patients who do not carry this allele.
- Abacavir should never be initiated in patients with a positive HLA-B\*5701 status, nor in patients with a negative HLA-B\*5701 status who had a suspected abacavir HSR on a previous abacavir-containing regimen.

# Key Risk Minimisation Points: Abacavir Hypersensitivity (HSR) - continued

- Abacavir must be stopped without delay, even in the absence of the HLA-B\*5701 allele, if an HSR is suspected. Delay in stopping treatment with abacavir after the onset of hypersensitivity may result in an immediate and life-threatening reaction.
- After stopping abacavir for a suspected HSR, any product containing abacavir must never be re-initiated.
- Restarting abacavir following a suspected HSR can result in a return of symptoms within hours which is more severe than on initial presentation and may include life-threatening hypotension and death.

**Rechallenge can result in a more rapid and severe reaction, which can be fatal. Rechallenge is contraindicated**



# **DIAGNOSIS OF ABACAVIR HYPERSENSITIVITY**

# Abacavir Hypersensitivity Reaction

- Idiosyncratic reaction
- Approximate reporting rate in clinical trials
  - 1% in trials that excluded subjects testing positive for the HLA-B\*5701 allele<sup>1</sup>
  - 5% in trials where HLA B\*5701 screening was not performed<sup>2</sup>
- Clinically well characterised<sup>3</sup>
  - Most HSR include fever and/or rash
  - Other symptoms include respiratory, gastrointestinal and constitutional symptoms such as lethargy and malaise.
  - Multiple symptoms are typical in most cases of hypersensitivity

1. Calculated from published data for four Marketing Authorisation Holder clinical trials: Post F et al. *JAIDS*. 2010;55 (1):9-57, Young B et al. *AIDS*. 2008;22(13):1673-1675, Wohl DA et al. *PLoS One*. 2014;9(5):e96187, Walmsley SL et al. *N Engl J Med*. 2013; 369(19):1807-18

2. Cutrell et al. *Ann Pharmacother*. 2004;38:2171-217

3. Hernandez et al. Abstract presented at: 15th International AIDS Conference; July 11-16, 2004; Bangkok, Thailand.

Note: Symptomatology was evaluated from clinical trials where HLA B\*5701 screening was not performed

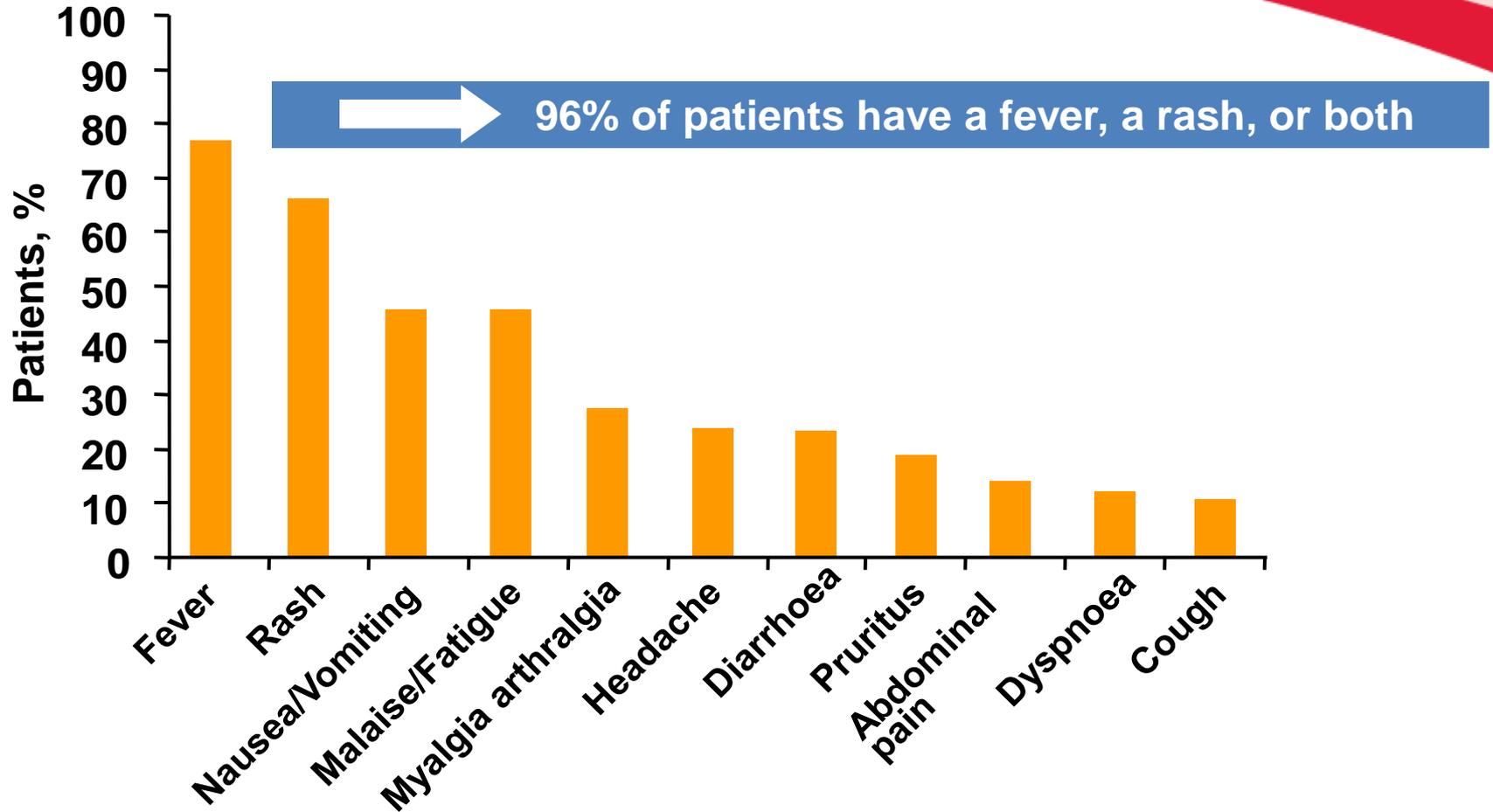
# Abacavir Hypersensitivity Reaction - *Continued*

- Symptoms usually appear within first 6 weeks of starting abacavir<sup>1</sup>
  - Median time to onset of 11 days
  - However, reactions can occur at any time during therapy
- Diagnosis is complicated by
  - Variable presentation with nonspecific symptoms
  - Concomitant use of other antiretroviral medications with overlapping adverse event profiles
- Symptoms improve on cessation of abacavir

1. Hetherington et al. *Clin Ther.* 2001;23:1603-1614.

Note: Data for time to onset was evaluated from clinical trials where HLA B\*5701 screening was not performed

# Hypersensitivity Symptoms Reported With a Frequency $\geq 10\%$



Hetherington et al. *Clin Ther.* 2001;23:1603-1614.

Note: Symptomatology was evaluated from clinical trials where HLA B\*5701 screening was not performed

# Additional Physical and Laboratory Findings

## Physical findings

Lymphadenopathy

Mucous membrane lesions  
(pharyngitis, conjunctivitis)

## Possible laboratory abnormalities

Haematological: lymphopaenia and thrombocytopaenia

Chest x-ray normal or diffuse bilateral or lobular infiltrates

Elevated liver enzymes (AST/ALT)

Increased serum creatinine and creatinine phosphokinase

# Hypersensitivity Reaction Warning Card – GDS/EU SmPC

*(Where Local Country Labelling aligns with the MAH Global Data Sheet or EU Product Information for the ABC-containing products)*

- Patients should contact their physician immediately for advice on whether they should stop taking abacavir if:
  1. They develop a skin rash; OR
  2. They develop 1 or more symptom from at least 2 of the following groups
    - Fever
    - Shortness of breath, sore throat or cough
    - Nausea or vomiting or diarrhoea or or abdominal pain
    - Extreme tiredness or achiness or generally ill feeling

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# PHARMACOGENETIC TESTING

# Pharmacogenetic Risk Factor for Abacavir HSR

- HLA-B\*5701 allele is more common among patients who have a suspected HSR to abacavir compared with those who do not.
- No other pharmacogenetic markers have been found that identify patients at risk of abacavir HSR.
- Prospective pharmacogenetic screening for HLA-B\*5701 can be used to identify patients at high risk for abacavir HSR.
- HLA-B\*5701 is not always present in people who have a suspected abacavir HSR
  - Therefore, clinical diagnosis of suspected HSR to abacavir remains the basis for clinical decision making
  - HLA-B\*5701 screening for risk of abacavir HSR should never be substituted for appropriate clinical vigilance and patient management in individuals receiving abacavir

# Recommendations for HLA-B\*5701 Screening

- Before initiating treatment with abacavir, screening for HLA-B\*5701 should be performed.
- Screening is also recommended prior to re-initiation of abacavir in patients of unknown HLA-B\*5701 status who have previously tolerated abacavir.
- HLA-B\*5701 status must always be documented and explained to the patient prior to initiating therapy.
- Results of pharmacogenetic tests for risk of abacavir HSR should never be used to support a drug rechallenge decision after a suspected HSR
- HLA-B\*5701 testing must not be used as a diagnostic test after a patient has started treatment with abacavir

# Supporting study data for HLA B\*5701 screening

**PREDICT-1 (CNA106030):** pivotal, double blinded, randomised clinical trial to establish the effectiveness of the HLA-B\*5701 allele as a predictive marker for abacavir (ABC) hypersensitivity reaction (HSR)<sup>1</sup>

- 1,956 ABC naive subjects randomised 1:1 in a double blinded fashion to:
  - Arm A) Retrospective HLA B\*5701 testing after starting ABC therapy (Controls)
  - Arm B) Prospective HLA-B\*5701 screening; positive patients excluded pre- ABC therapy
- Retrospective epicutaneous patch testing (EPT) in all cases of clinically suspected ABC HSR

ABC HSR <sup>2</sup>	Arm A	Arm B	p value	OR (95% CI) <sup>3</sup>
Clinically Suspected	7.8% (66/847)	3.4% (27/803)	<0.0001	0.40 (0.25–0.62)
Immunologically (EPT) Confirmed	2.7% (23/842)	0.0% (0/802)	<0.0001	0.03 (0.00–0.18)

- Estimated that 48% - 61% of patients with HLA B\*5701 will develop HSR on ABC-containing therapy vs. 0% to 4% of patients who do not have the allele

1. Mallal et al. N Engl J Med. 2008;358;568-579. 2. Intention-to-treat evaluable population. 3. Odds ratio (OR); Confidence interval (CI); Prospective screen versus control adjusted for actual strata of race, ART status, introduction of NNRTI, and concurrent PI use.

# Supporting study data for HLA B\*5701 screening

**SHAPE (ABC107442):** a retrospective case-control study to estimate the sensitivity and specificity of the HLA-B\*5701 allele in self-reported White and Black subjects with and without suspected ABC HSR, using EPT to supplement clinical diagnosis of abacavir hypersensitivity<sup>1</sup>

- Conclusions

- 100% sensitivity of HLA-B\*5701 in white and black subjects with EPT– confirmed ABC HSR
- Lower sensitivity of HLA-B\*5701 screening observed when ABC HSR was defined by clinical diagnosis alone
- Not all HLA-B\*5701–positive subjects had a positive EPT test result
- Prospective HLA-B\*5701 screening may reduce ABC HSR rates in white and black subjects
- The presence of the HLA-B\*5701 allele is associated with increased risk of ABC HSR, regardless of race

**Data from PREDICT-1 and SHAPE do not support the use of skin patch testing in routine clinical practice**

# Supporting study data for HLA B\*5701 screening

- A limitation from PREDICT-1: Investigators were blinded to subjects HLA B\*5701 status during the study, which would not be the case in clinical practice
- Recent marketing authorisation holder (MAH) trials, which prospectively screened for the HLA-B\*5701 allele and excluded subjects testing positive, more accurately reflect experience and reporting rates in clinical practice

MAH Sponsored Clinical Trials with prospective HLA-B*5701 screening	ABC- containing treatment group	HSR Reporting Rate % (n/N)
ASSERT (CNA109586) <sup>1</sup>	ABC/3TC + EFV	3.1 (6/192)
ARIES (EPZ108859) <sup>2</sup>	ABC/3TC + ATV+ RTV	1 (4/491)
ASSURE (EPZ113734) <sup>3</sup>	ABC/3TC + ATV	<1 (1/199)
SINGLE (ING114467) <sup>4</sup>	ABC/3TC + DTG	<1 (1/414)
<b>Total</b>		<b>1 (12/1320)</b>

ABC/3TC = KIVEXA; ATV = atazanvir; DTG = dolutegravir; EFV = efavirenz; RTV = ritonavir.

1. Post F et al. *JAIDS*. 2010;55 (1):9-57
2. Young B et al. *AIDS*. 2008;22(13):1673-1675.
3. Wohl DA et al. *PLoS One*. 2014;9(5):e96187
4. Walmsley SL et al. *N Engl J Med*. 2013; 369(19):1807-18

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# **MANAGEMENT OF ABACAVIR HYPERSENSITIVITY REACTION**

# Counseling the Patient

- Patients must be made aware of the possibility of a hypersensitivity reaction to abacavir that may result in a life-threatening reaction or death, and that the risk of a hypersensitivity reaction is increased if they are HLA-B\*5701 positive.
- Each patient should be reminded to read the Package Leaflet included in the abacavir pack. They should be reminded of the importance of removing the Alert Card included in the pack, and keeping it with them at all times.
- In order to avoid restarting abacavir, patients who have experienced a hypersensitivity reaction should be asked to return the remaining abacavir tablets or oral solution to the pharmacy.

# Clinical Management of Abacavir Hypersensitivity

- Regardless of HLA-B\*5701 status, patients who are diagnosed with a hypersensitivity reaction **MUST** discontinue abacavir immediately.
  - Abacavir must be permanently discontinued if hypersensitivity cannot be ruled out.
- Delay in stopping treatment with abacavir after the onset of hypersensitivity may result in an immediate and life-threatening reaction.
- Regardless of HLA-B\*5701 status, abacavir or any medicinal product containing abacavir, **MUST NEVER** be restarted in patients who have stopped therapy due to a hypersensitivity reaction.
- Following discontinuation of abacavir, the symptoms of the reaction should be treated according to local standard of care

# Clinical Management of Abacavir HSR – Restarting Abacavir

- Abacavir or any medicinal product containing abacavir, **MUST NEVER** be restarted in patients who have stopped therapy due to HSR.
  - Restarting abacavir following HSR results in a prompt return of symptoms within hours and this recurrence is usually more severe than on initial presentation, and may include life-threatening hypotension and death.
- If abacavir therapy is stopped for reasons other than suspected HSR
  - Screening for carriage of the HLA B\*5701 allele is recommended prior to re-initiation of abacavir in patients of unknown HLA-B\*5701 status who have previously tolerated abacavir. **Re-initiation of abacavir in such patients who test positive for the HLA-B\*5701 allele is contraindicated.**
  - Rarely, patients who have stopped abacavir for reasons other than symptoms of HSR have also experienced life-threatening reactions within hours of re- initiating abacavir therapy. Restarting abacavir in such patients must be done in a setting where medical assistance is readily available.

## Further resources

- Before prescribing abacavir-containing medicines (Ziagen, Kivexa, Trizivir or Triumeq), please refer to the local country label
- Healthcare providers are asked to report any suspected adverse reactions to GlaxoSmithKline, ViiV Healthcare Ltd or your local regulatory authority

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# **MODEL CASE STUDIES ON HYPERSENSITIVITY**

# Case Presentation #1

- A 46-year-old woman, newly diagnosed with HIV infection, initiated therapy with abacavir, lamivudine, and efavirenz
  - HLA-B\*5701 status unknown
- On day 8 of therapy, her physician noted a mild pruritic rash on her neck and trunk
  - The patient was afebrile, had no gastrointestinal symptoms, and felt well
  - She did not have any muscle or joint aches, respiratory symptoms, or tenderness or swelling of the lymph nodes
  - She had not taken any other medications
- Differential diagnoses include
  - A reaction to efavirenz
  - Abacavir hypersensitivity
  - Immune reconstitution syndrome

# Case Presentation #1 (cont)

- Course of action
  - Patient has a single mild symptom, so closely monitor for resolution or progression before making a decision
    - Review symptoms of hypersensitivity
    - Instruct patient to continue all medications and immediately contact physician if other symptoms develop
    - Re-evaluate patient after 24 hours
- Follow-up
  - Patient continued all medications
  - Rash improved over the next 4 days with no further symptoms
- Conclusion
  - Patient had a transient efavirenz-related rash (i.e. not a hypersensitivity reaction)

# Case Presentation #1: Alternative Scenario

- After noticing the rash 3 days before, the patient discontinued all medications; the rash has since resolved
- Course of action
  - Permanently discontinue abacavir: Although the reaction may have been an efavirenz rash, by stopping all drugs it is no longer possible to differentially diagnose an abacavir hypersensitivity reaction without exposing the patient to the risk of rechallenge

# Case Presentation #1: Summary

- A single symptom is not sufficient for a diagnosis of hypersensitivity
  - **Drug interruption after a single symptom should be avoided**
    - Resolution of symptom off-drug makes a differential diagnosis impossible
  - However, if abacavir **is** interrupted, **it should not be restarted**
    - Resolution of symptom may represent aborted evolution of a multisymptom hypersensitivity reaction
    - Reinitiation puts the patient at risk for a rechallenge reaction
    - Abacavir should be retrieved from patient to avoid the risk of rechallenge
- Take a careful history, and review for other symptoms
- Continue to monitor the patient
- Avoid corticosteroids in case they mask the development of additional symptoms
- Use antihistamines if necessary for the patient's comfort

# Case Presentation #2

- 29-year-old male with a history of HSV and syphilis
- Newly diagnosed with HIV, low CD4 (<200 cells/mm<sup>3</sup>), and high viral load
- Negative screening result for HLA-B\*5701
- Initiated abacavir, lamivudine, and lopinavir/r
- Concomitant medications
  - Valacyclovir (chronic medication) initiated before antiretroviral therapy
  - Co-trimoxazole initiated with antiretrovirals

## Case Presentation #2 (cont)

- **Day 8:** Patient noted myalgias and low-grade fever peaking at 37.8°C
- **Day 9:** Patient noted faint rash with low-grade fever peaking at 39°C approximately 9 hours after morning dose
- **Day 10:** Patient experienced same symptoms at the same time after morning dose, but fever peaked at 38°C with fewer myalgias
- **Day 11:** Patient was evaluated in clinic
  - Temperature 37°C
  - Generalised fine urticarial rash
  - Asymptomatic

# Case Presentation #2 (cont)

- Course of action
  - Symptoms appear to have been resolving each day despite continued abacavir dosing over several days
  - Symptom resolution and the patient's negative HLA-B\*5701 screening status suggest another aetiology
  - Continue abacavir dosing with close monitoring and discontinue co-trimoxazole
- Follow-up
  - Co-trimoxazole is stopped on day 11; subject is seen in the clinic on days 12 and 13, and symptoms continue to decline in severity
  - Patient is given topical steroids and antihistamines for the rash
  - By day 15, rash and myalgias have resolved and patient remains afebrile on abacavir, lamivudine, and lopinavir/r
- Conclusion
  - Hypersensitivity to Co-trimoxazole

## Case Presentation #2: Alternative Scenario

- Patient is seen on days 12 and 13; symptoms continue but do not increase or decrease in severity
- Patient is given topical steroids and antihistamines for the rash
- By day 15, rash is resolving but myalgias continue; patient complains of malaise
- Course of action
  - Permanently discontinue abacavir if no other cause of the patient's symptoms is identified; in this case, abacavir hypersensitivity cannot be definitively ruled out

## Case Presentation #2: Summary

- Consider other causes for rash and fever when patient is taking concurrent medications known to be associated with these symptoms or with allergies, particularly if screening suggests a low risk of abacavir hypersensitivity
- However, a negative HLA-B\*5701 screen does **not** definitively rule out the possibility of a hypersensitivity reaction
  - If a diagnosis of abacavir hypersensitivity cannot be excluded, then abacavir must be permanently discontinued, regardless of the results of any test

## Case Presentation #3

- 45-year-old male initiated treatment with abacavir, lamivudine, and boosted fosamprenavir
  - HLA-B\*5701 status unknown
- **Day 5:** Onset of vomiting
- **Day 6:** Onset of diarrhoea; nausea worsens with more frequent vomiting
- **Day 7:** Development of fever to 39°C and general weakness; gastrointestinal symptoms continue without further increase in severity; careful search revealed no rash

# Case Presentation #3 (cont)

- Course of action
  - Permanently discontinue abacavir
    - Cumulative, multiorgan symptomatic onset indicates a high probability of a developing abacavir hypersensitivity reaction
- Follow-up
  - Within 24 hours of abacavir discontinuation, patient is afebrile and gastrointestinal symptoms are resolving
- Conclusion
  - Patient experienced abacavir hypersensitivity

# Case Presentation #3: Summary

- Rash is very common in abacavir hypersensitivity; however, just as rash alone would not be sufficient for a diagnosis of a hypersensitivity reaction, neither is the absence of rash a reason to exclude a diagnosis of hypersensitivity in the presence of other consistent symptoms; rash may occur late or even after discontinuation of abacavir
- Other features point towards the diagnosis of a hypersensitivity syndrome
- Patient developed multiorgan involvement, including constitutional and gastrointestinal symptoms
  - Even in the absence of a rash, patient's symptoms point to a possible diagnosis of abacavir hypersensitivity
- Symptoms did not all appear at once but in a stepwise manner

## Kivexa Abridged PI

*\*Please refer to the full Summary of Product Characteristics (SPC) before prescribing*

**Trade Name:** KIVEXA. **Active Ingredients:** abacavir/lamivudine. **Pharmaceutical Form:** 600mg/300mg film-coated tablets.

**Indication:** Combination therapy for the treatment of HIV infection in adults and adolescents from 12 years of age. **Posology and**

**Method of Administration:** Before initiating treatment with abacavir, screening for carriage of the HLA-B5701 allele should be performed. Abacavir should not be used in patients known to carry the HLA-B5701 allele. *Adults and Adolescents (weighing 40Kg or over):* One tablet once daily. Kivexa should be taken orally with or without food. Caution should be exercised in renal

impairment. In patients with mild and moderate hepatic impairment close monitoring is required. *Elderly:* There is limited experience in patients >65 years of age. Special care is advised. *Paediatric population:* There is no data available for children less than 12 years of age. **Contraindication:** hypersensitivity to the active substances. **Precautions for Use:** While effective viral suppression with antiretroviral therapy has been proven to substantially reduce the risk of sexual transmission, a residual risk cannot be excluded. Precautions to prevent transmission should be taken in accordance with national guidelines.

*Hypersensitivity reaction:* Abacavir is associated with a risk for hypersensitivity reactions (HSR) characterised by fever and/or rash with other symptoms indicating multi-organ involvement. Any patient who develops signs or symptoms consistent with a possible hypersensitivity reaction to abacavir must contact the prescriber immediately. *Liver disease:* The safety and efficacy of Kivexa has not been established in patients with significant underlying liver disorders. Kivexa is not recommended in patients with moderate or severe hepatic impairment Patients with chronic hepatitis B or C and treated with combination antiretroviral therapy are at an increased risk of severe and potentially fatal hepatic adverse reactions (refer to the full SPC for complete list of precautions). The combination of lamivudine with cladribine is not-recommended (refer to the full SPC for complete list of interactions). Other precautions include, pancreatitis, risk of virological failure, mitochondrial dysfunction, Immune Reactivation Syndrome osteonecrosis, myocardial infarction and opportunistic infections. **Fertility, Pregnancy and Lactation:** *Pregnancy:* Refer to full SPC. *Lactation:* Mothers should be instructed not to breast-feed if they are receiving Kivexa. *Fertility:* There is no data in humans. **Effect on Ability to Drive or Use Machines:** No studies conducted. **Side Effects:** Common (> 1/100 to < 1/10) side effects include headache, insomnia, cough, nasal symptoms, anorexia, nausea, vomiting, diarrhea, rash, arthralgia, fatigue, lethargy, malaise and fever. Uncommon side effects (>1/1000 to <1/100) include neutropenia, anaemia and transient rises in liver enzymes (refer to the full SPC for complete list of side effects). **Overdose:** There is no specific antidote. Treatment of overdose should consist of general supportive measures. **Local Presentation:** 600mg/300mg (by 60 film-coated tablets).

**Marketing Authorization Holder:** ViiV Healthcare UK Ltd. **Marketing Authorization Number:** EU/1/04/298/001-3. **Legal**

**Category:** POM. **Date of Preparation:** April 2016

***IN ORDER TO ENSURE THAT THIS PRODUCT INFORMATION REFLECTS THE MOST UP-TO-DATE CLINICAL AND POST-MARKETING SURVEILLANCE DATA, PLEASE ALWAYS REFER TO THE LATEST SPC, WHICH IS AVAILABLE FROM: GSK (MALTA) LIMITED (TEL: 21238131)***

*REPORTING ADVERSE EVENTS (AEs):*

*Malta* : If you become aware of any AEs, medication errors and/or use during pregnancy in association with GSK products, please report the event promptly to: GSK (Malta) Ltd, 1, De la Cruz Avenue, Qormi QRM 2458, Malta (Tel: +356 21238131)

*Malta*: alternatively, any suspected AEs and medication errors can be reported via the Medicines Authority Adverse Drug Reactions reporting website:  
[www.medicinesauthority.gov.mt/adrportal](http://www.medicinesauthority.gov.mt/adrportal)