

# Actualités thérapeutiques dans la LMC: Asciminib

Dr QUITTET Philippe

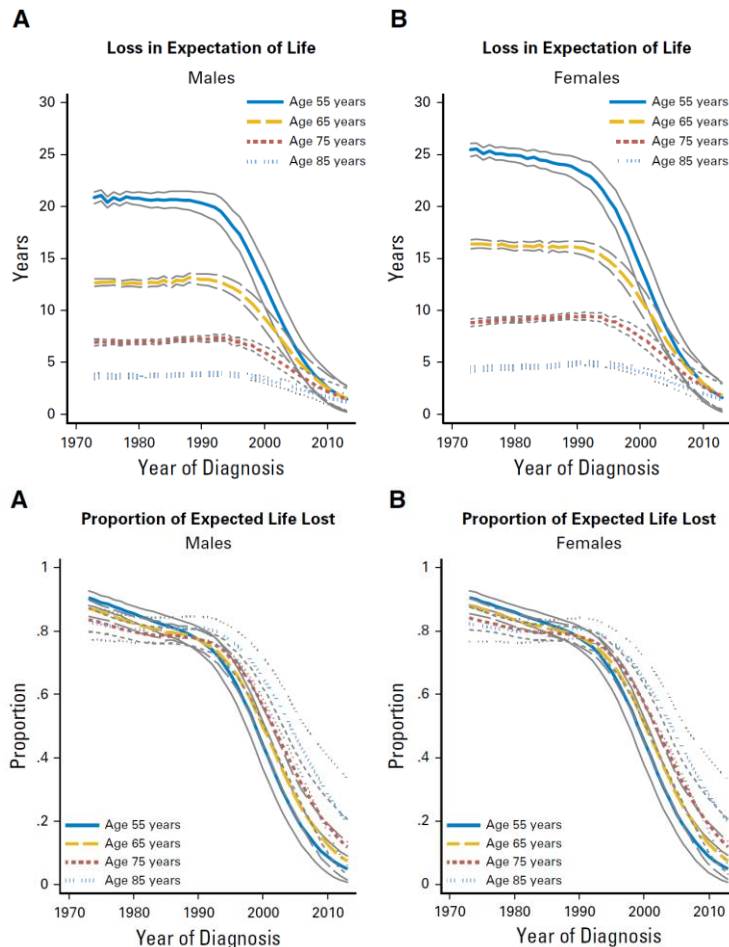
CHU Montpellier

04/04/2023

Rappel très court LMC en 2023

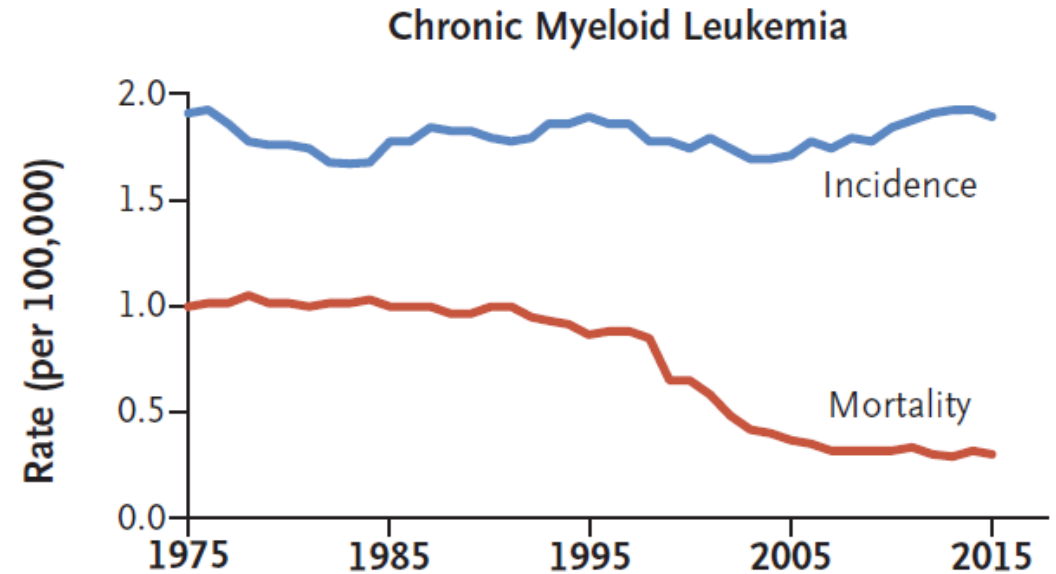
# LMC: nouvelle espérance de vie

- La perte d'espérance de vie a diminué très significativement avec les décennies



Toutes les catégories d'âge Profitent de l'amélioration de la survie

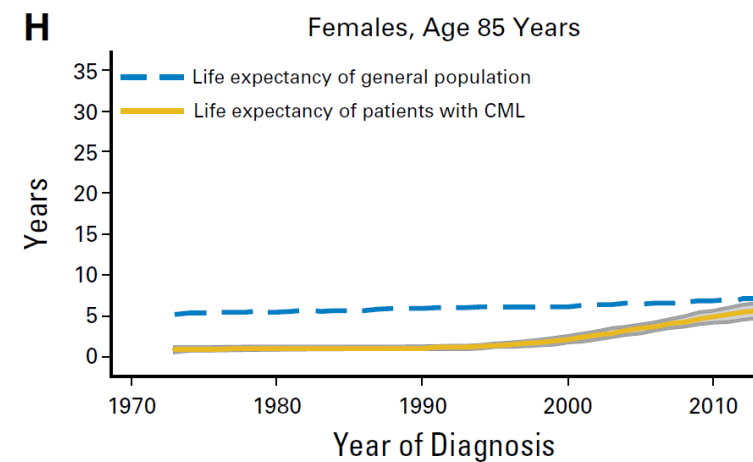
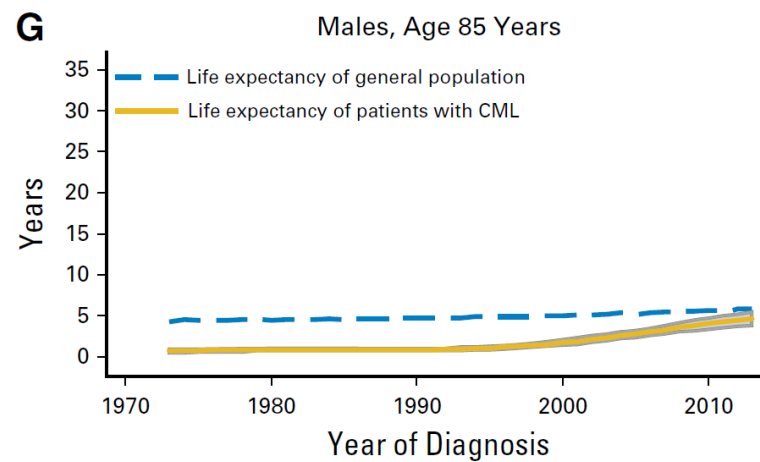
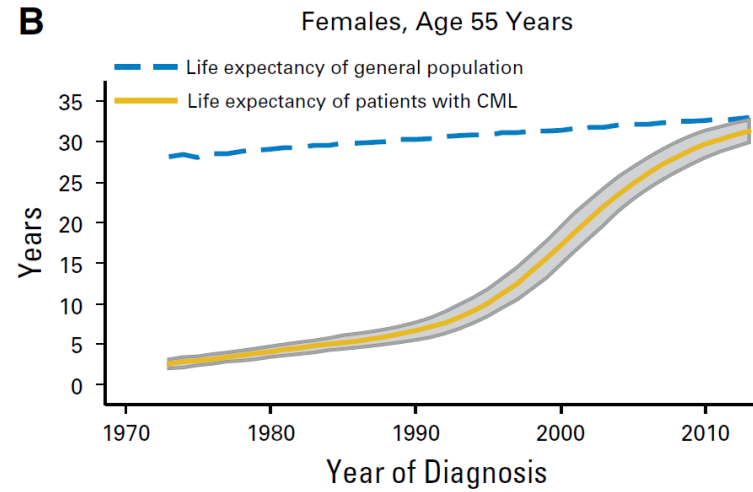
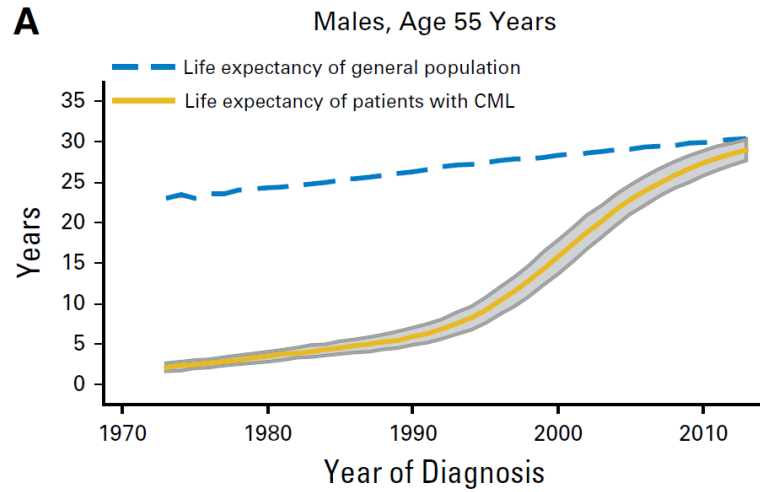
Bower, JCO 2016



Welch NEJM 2019

# LMC espérance de vie

Registre suédois  
de 1973 à 2013  
N = 2 662



Toutes les catégories d'âge  
profitent de l'amélioration de la survie  
quasi-équivalente à la population générale

# LMC augmentation de la prévalence

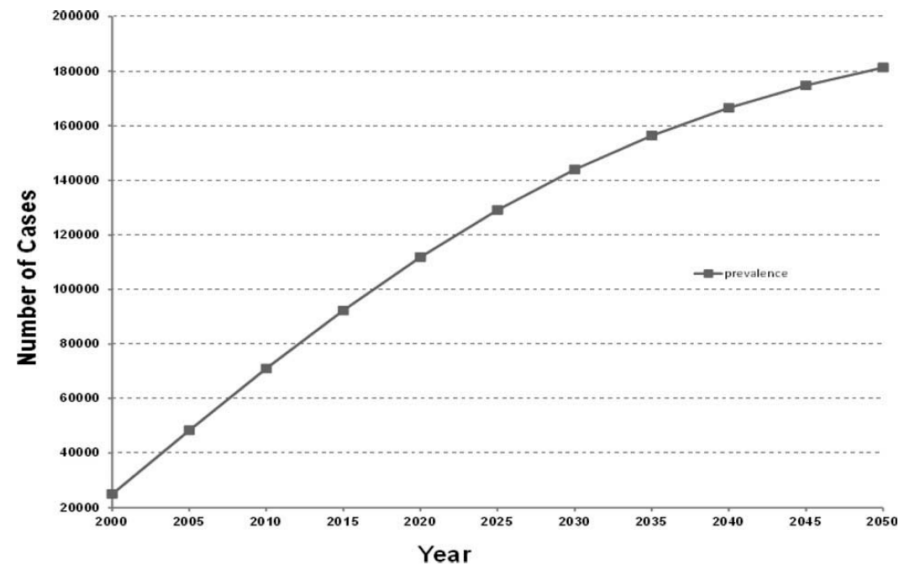
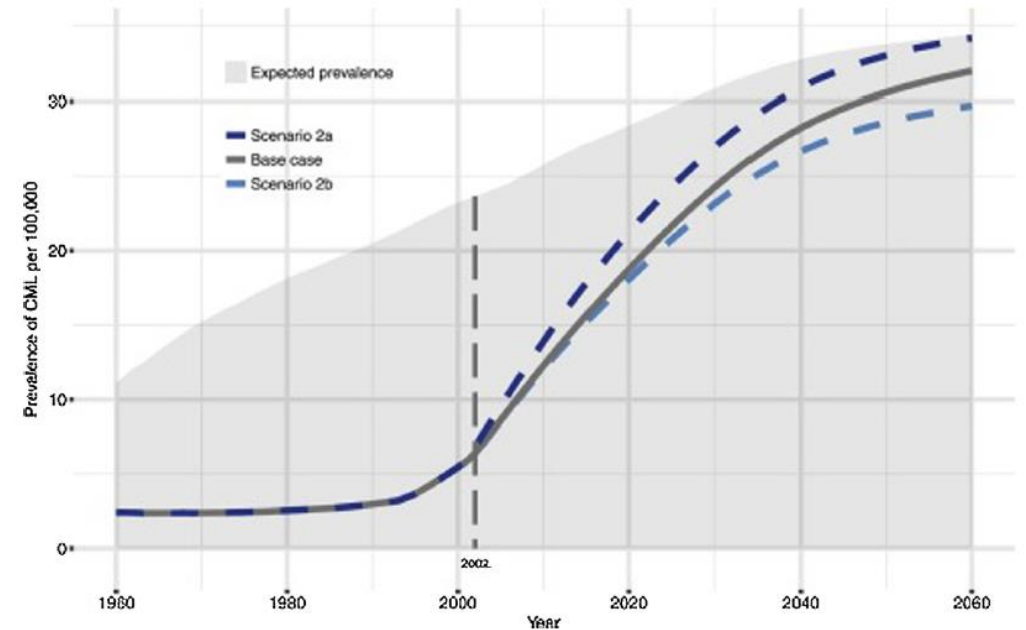


Figure 1. The estimated prevalence of chronic myeloid leukemia in the United States by calendar year is illustrated.

Huang Cancer 2012

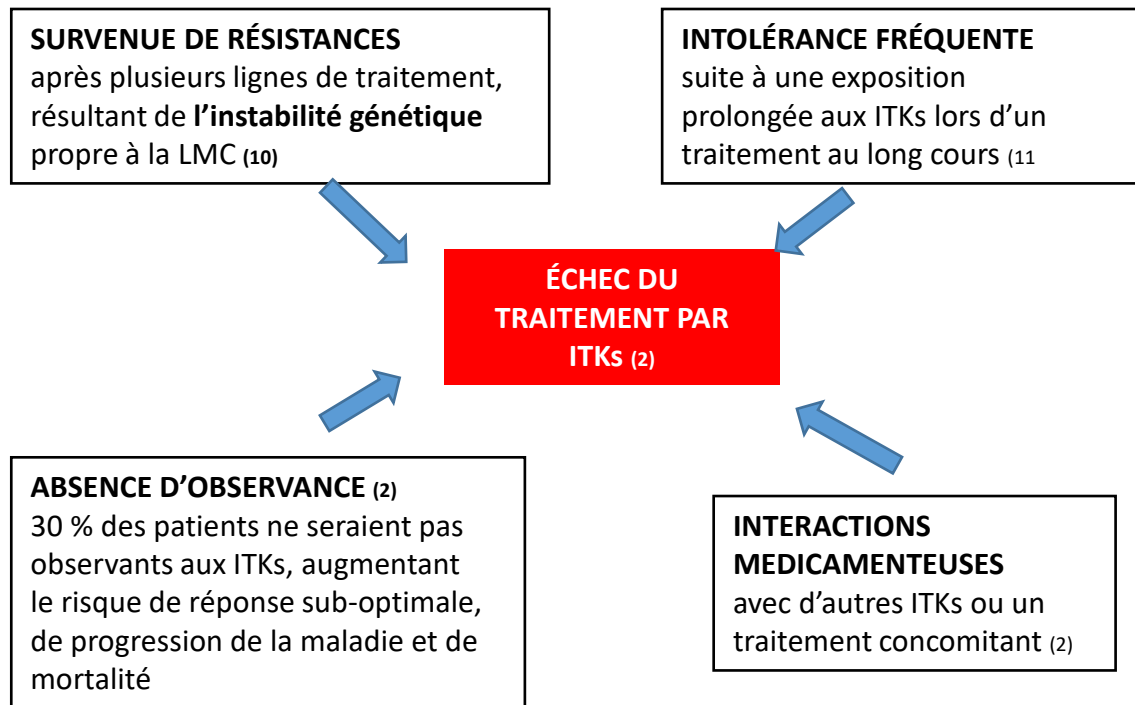


Delord Leuk Research 2018

Prévalence x10 entre 2012 et 2040

Avec impact financier +++

Malgré les thérapies ciblées, de nombreux « BESOINS MÉDICAUX NON COUVERTS » persistent en 3<sup>ème</sup> ligne



Nette diminution de la survie au fur et à mesure des lignes de traitement



La diminution de la survie globale est associée

A une phase avancée de la maladie

A une réponse insuffisante en 1<sup>ère</sup> ligne de traitement

A l'interruption de la 1<sup>ère</sup> ligne de traitement pour toute autre raison

Toujours des besoins non couverts

→ Chez un patient résistant à un ITK2G, on peut faire la tentative d'un autre ITK2G. Les autres possibilités sont d'envisager un ITK3G et pour les patients éligibles une allogreffe de CSH.

→ Chez un patient sans aucune solution (autre ITK, essai clinique, allogreffe), l'objectif du traitement sera uniquement le contrôle des symptômes

# LMC: est-ce que tout est réglé en 2023 ?

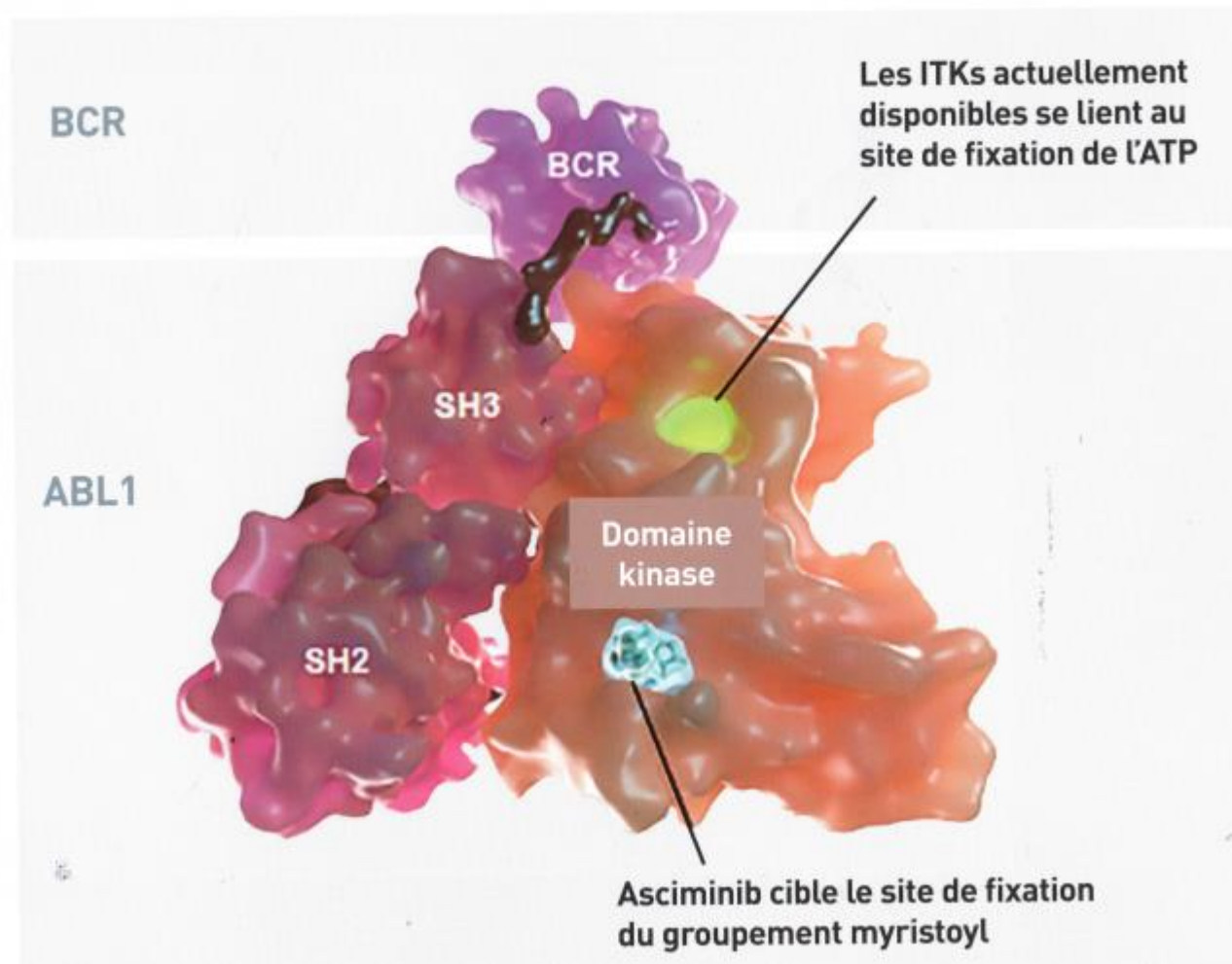
- LMC maladie réglée pour tout le monde ?
  - **NON** car
    - Il reste encore des quelques **progressions**: entre 5 et 10 % des patients
    - Il reste encore des **échecs**:
      - il est estimé qu'environ 15 % des patients vont résister à un ITK en 2<sup>ème</sup> ligne
    - Il reste des **intolérances de classe**
    - Il reste des **EIG à gérer**: effets «off-target» sur le long terme

# Reste donc un «medical needs »

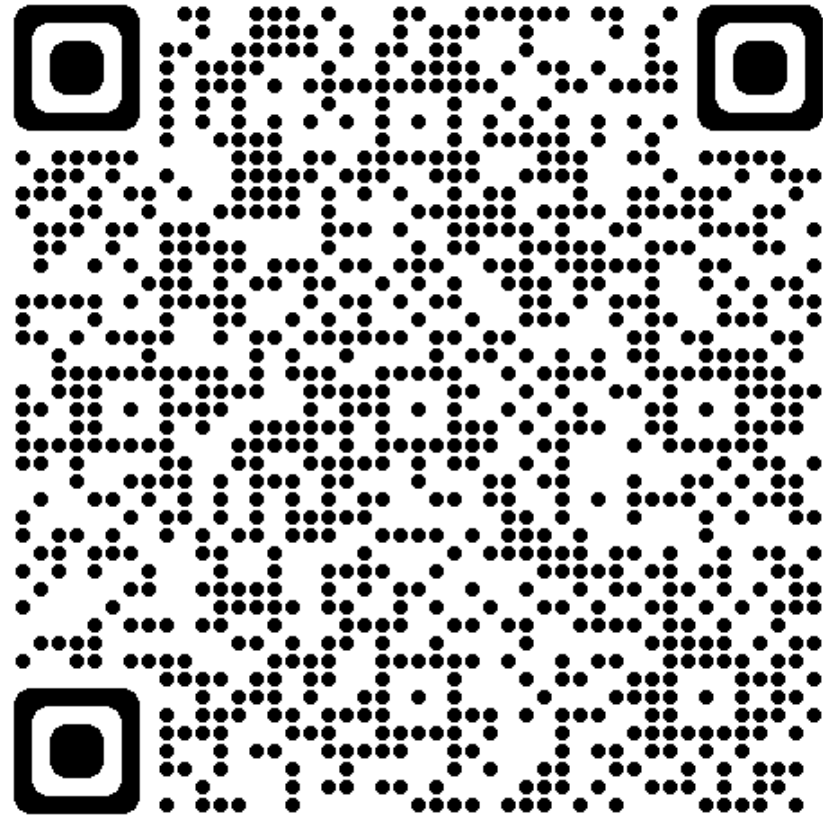
- Asciminib
- Nouvelle molécule: inh. STAMP
  - STAMP: **S**pecifically **T**argeting the **A**bl1 **M**yristoyl **P**ocket
  - Tout nouveau mécanisme d'action



## NOUVEAU CIBLAGE SPECIFIQUE DE BCR::ABL1 PAR SCEMBLIX® (asciminib) <sup>(1,2)</sup>



Mécanisme d'action: à flasher please ! 3 mn



# Mécanisme d'action

- <https://www.professionnels.novartis.fr/node/918731?hash=cf8371f98689e762b05ea467955d111aad57cc400f6e77e8a8a4946515191961>

# Etude Assembl

- Etude phase 3:
  - Asciminib vs Bosutinib
  - Random 2 : 1
  - Switch possible en cours
- Inclusion:
  - LMC-PC après 2 ITK
  - En échec ou intolérant
  - Pas de mutation T315I ou V299L
  - $bcr::abl \geq 0,1\%$

# Etude Assembl

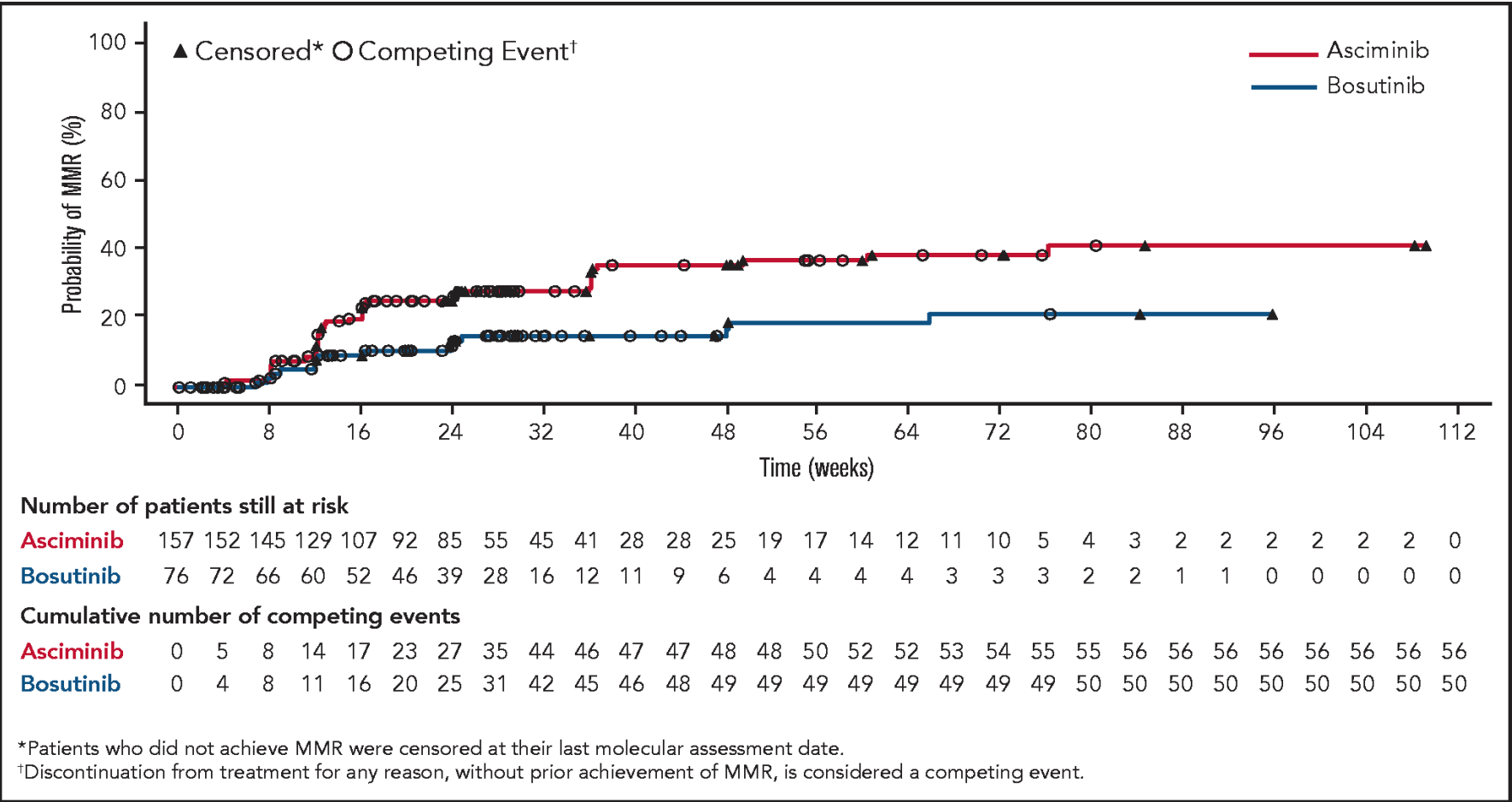
- Critère principal

- RMM à 24 semaines
- RMM à 96 semaines

- Critères secondaires

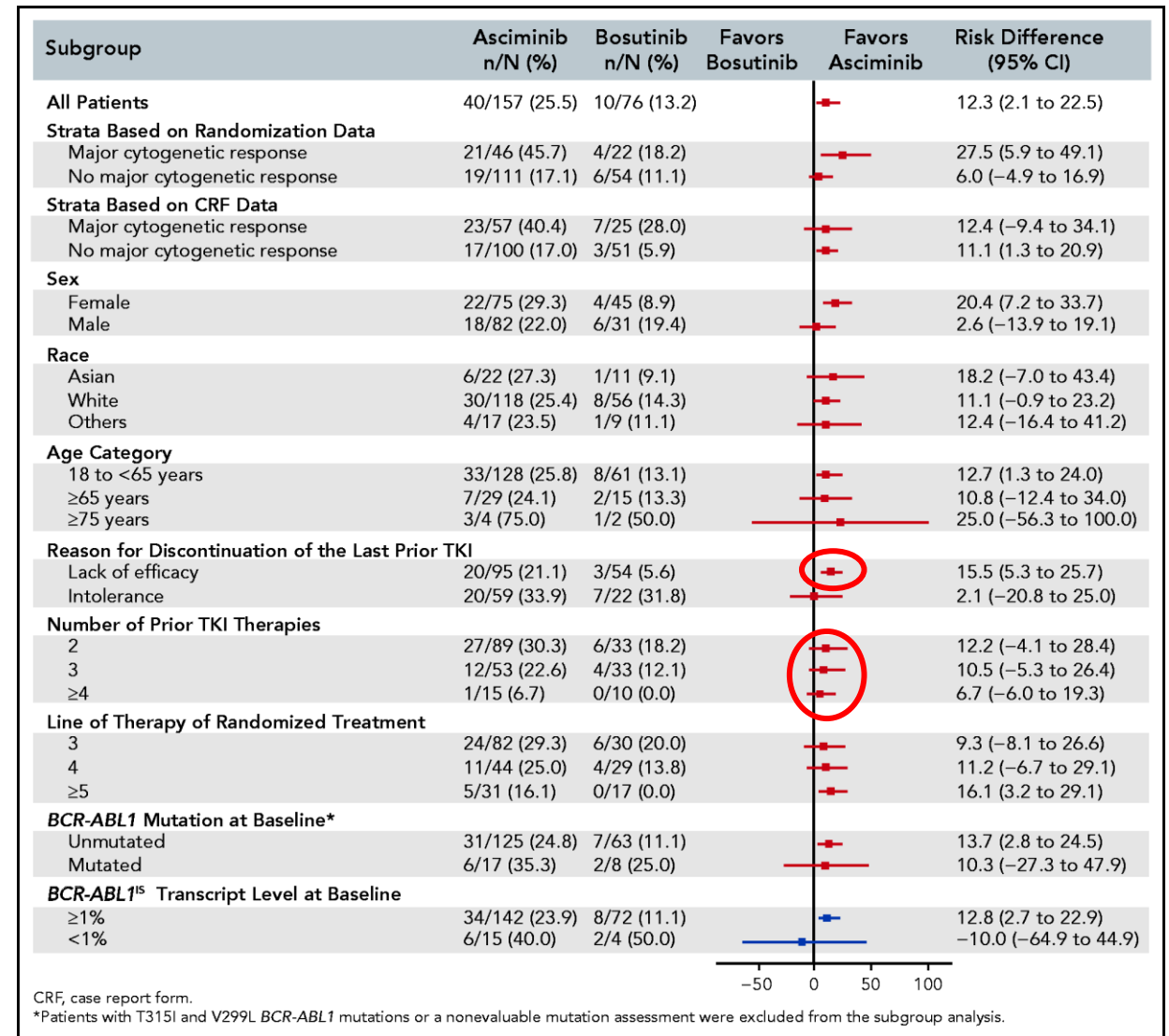
- RCCy

The cumulative incidence of MMR by **week 24** was 25.5% with asciminib vs 13.2% with bosutinib



# Risk difference (95% CI) for MMR at week 24 from subgroup analyses

- Asciminib
  - Avantage quelque soit lignes ITK
  - Surtout si absence efficacité

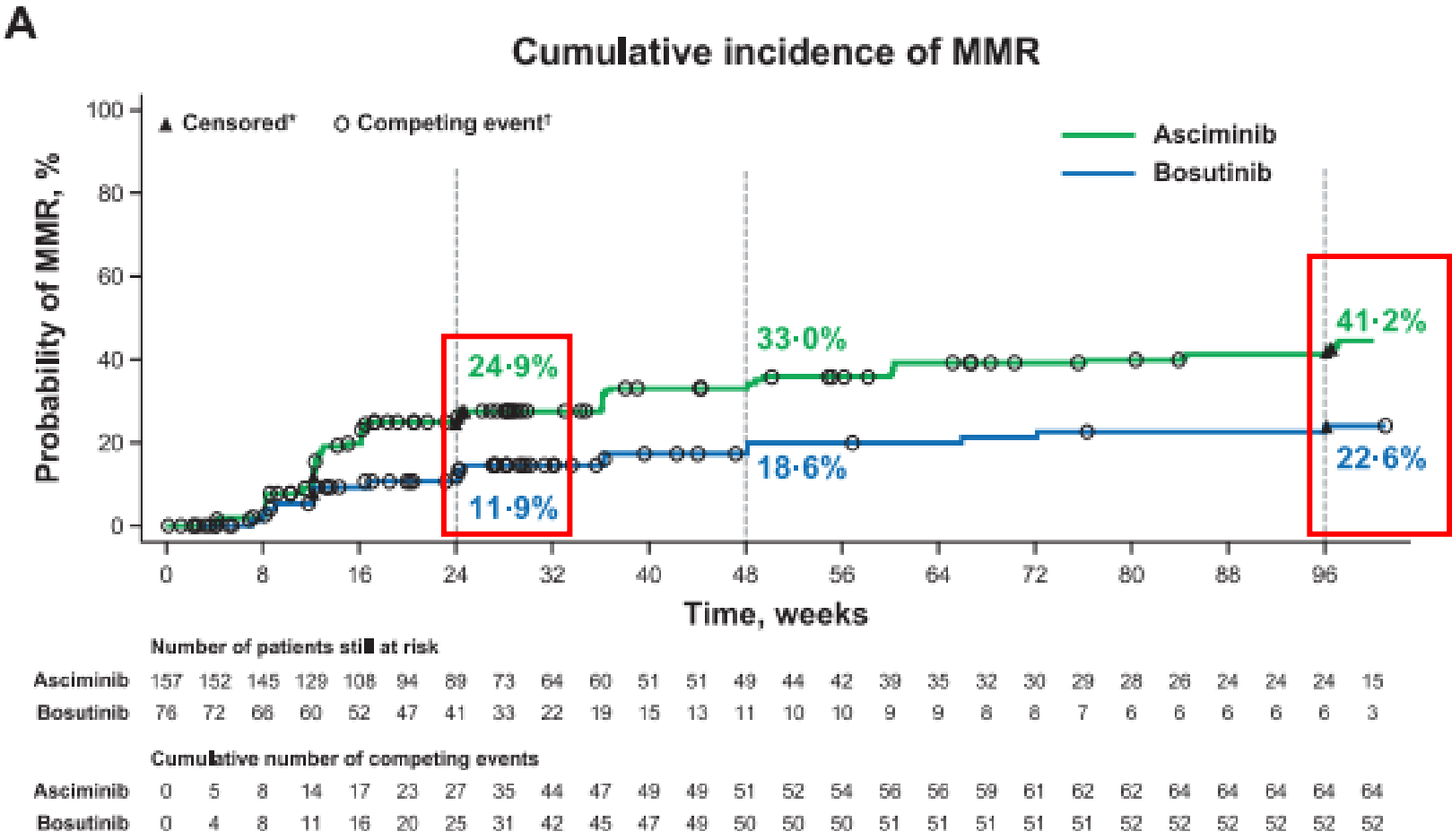


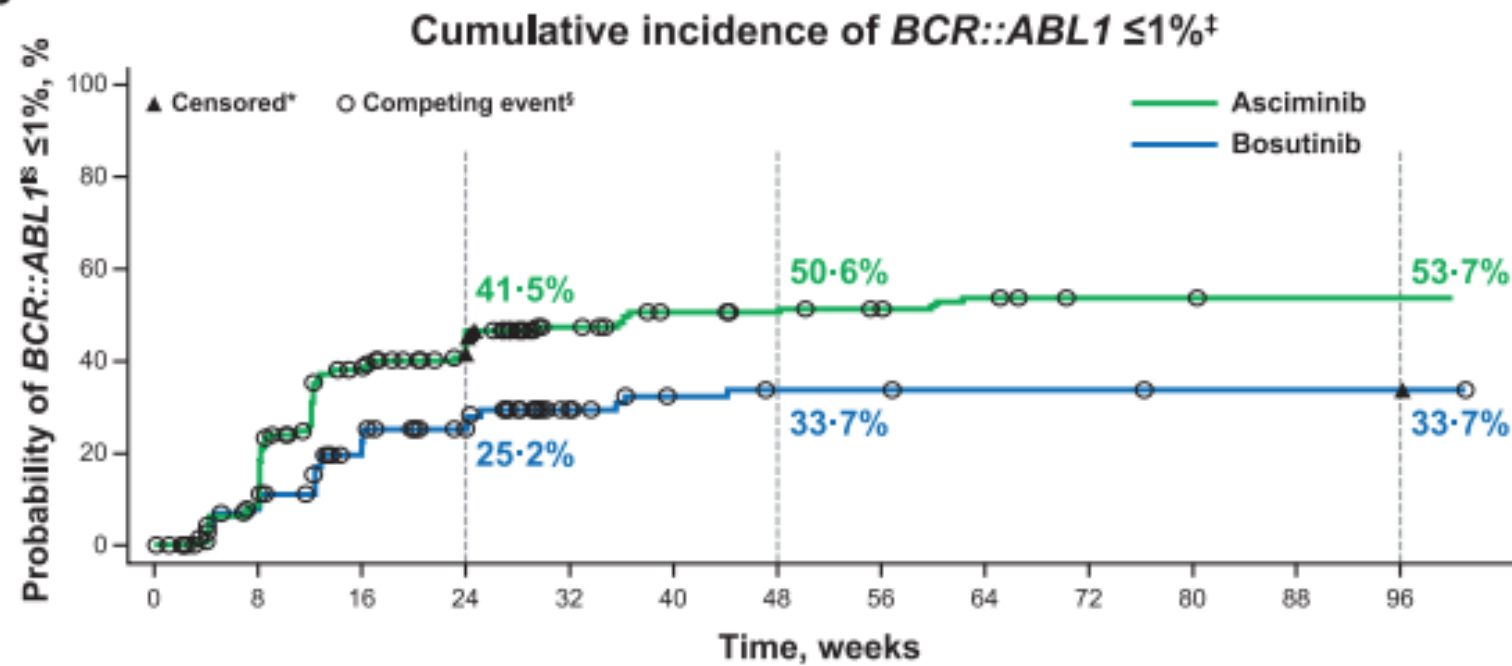
# CCyR at week 24 and 96

- The CCyR rate at week 24 in patients without CCyR at baseline was 40.8% with asciminib vs 24.2% with bosutinib
- At week 96: asciminib 39,8% vs 16,1% with bosutinib



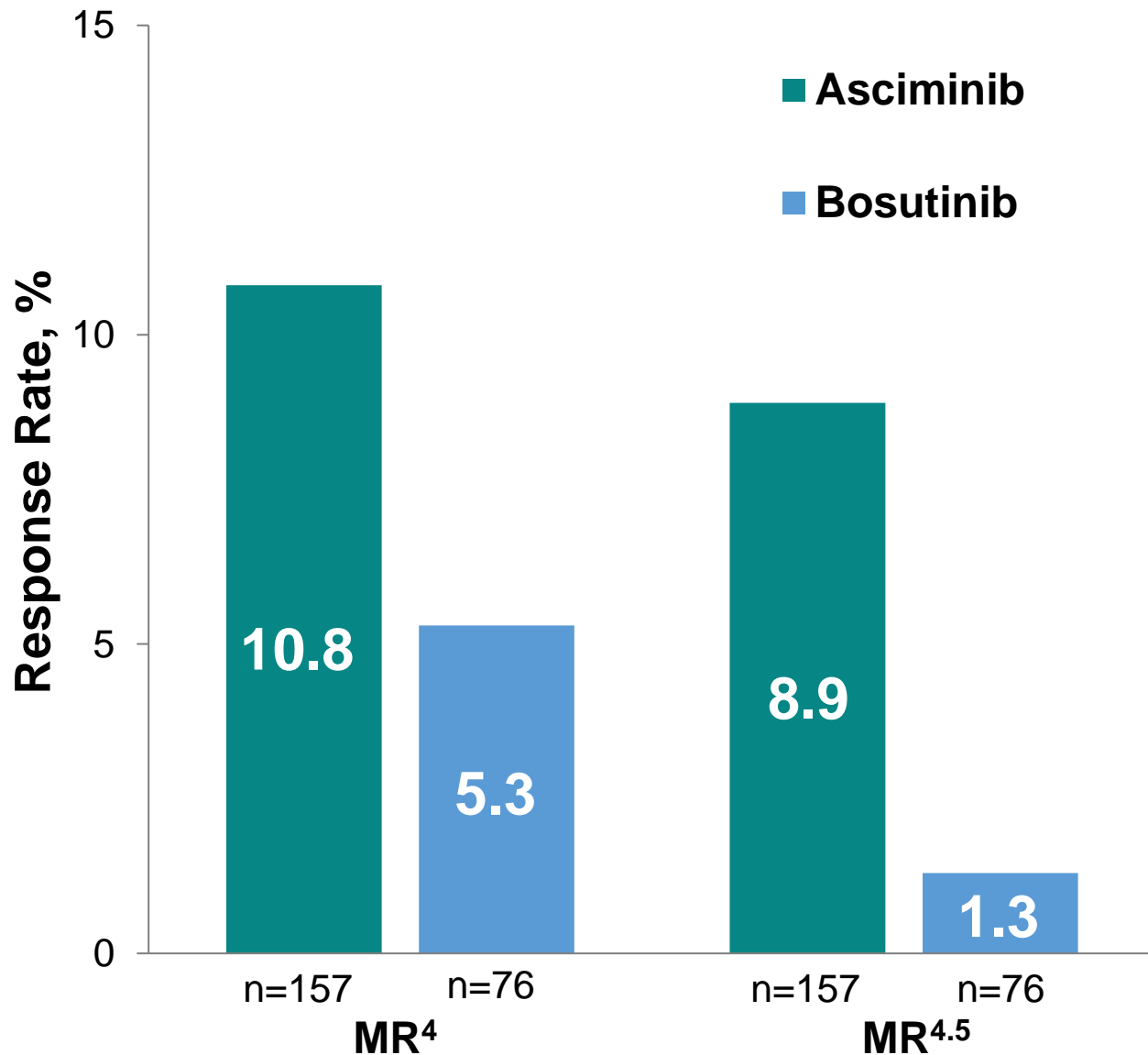
The cumulative incidence of MMR by **week 96** was 41,2% with asciminib vs 22,6% with bosutinib



**B**

Taux de réponses moléculaires profondes

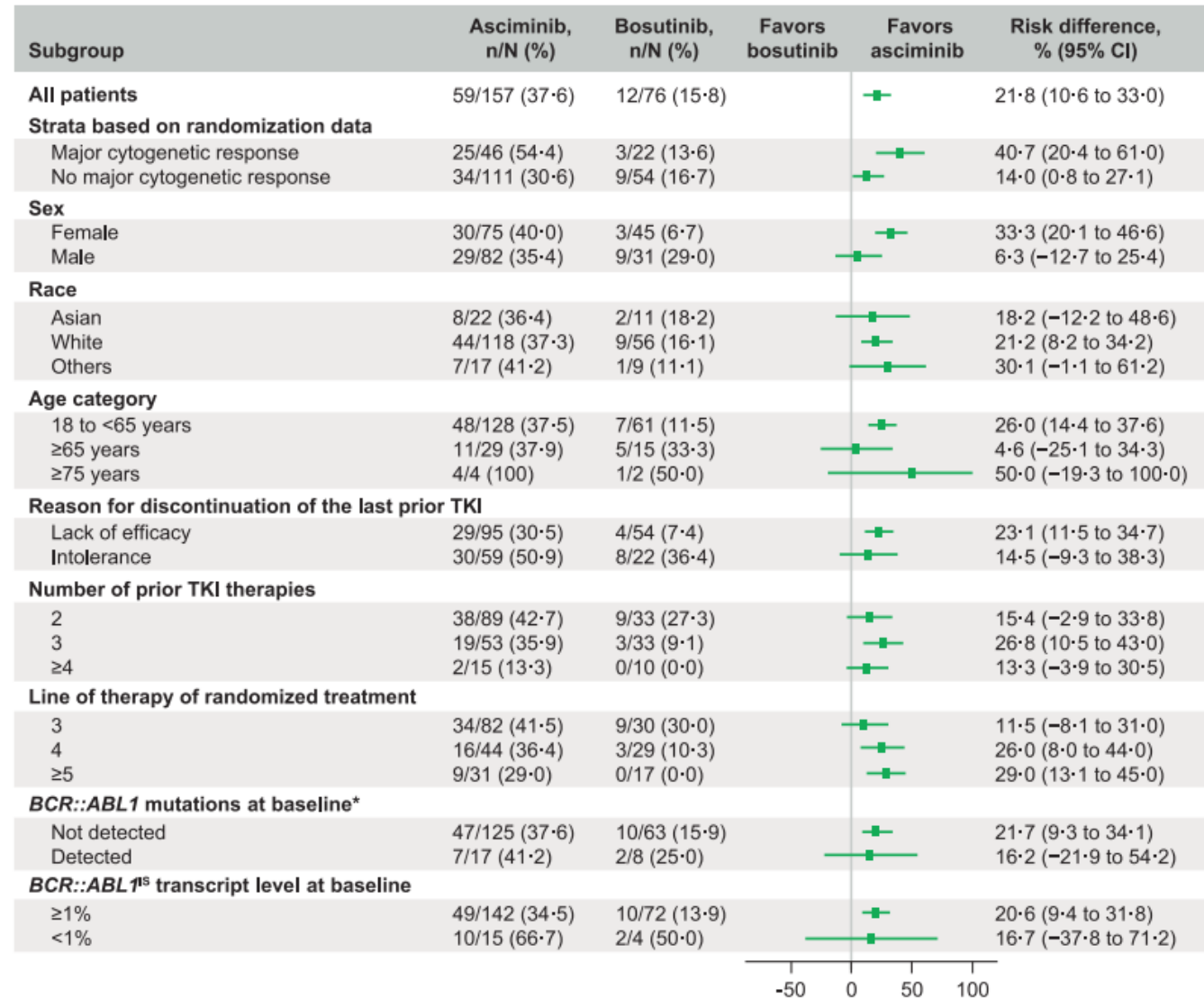
# MR<sup>4</sup> and MR<sup>4.5</sup> Rates at 24 Weeks



- At 24 weeks, more patients on asciminib than on bosutinib achieved MR<sup>4</sup> and MR<sup>4.5</sup>
  - MR<sup>4</sup> or lower: 17 (10.8%) patients on asciminib vs 4 (5.3%) on bosutinib
  - MR<sup>4.5</sup>: 14 (8.9%) patients on asciminib and 1 (1.3%) on bosutinib
- Rates of *BCR-ABL1*<sup>IS</sup> ≤1% at week 24 among patients with *BCR-ABL1*<sup>IS</sup> >1% at baseline:
  - Asciminib (n = 142): 44.5%
  - Bosutinib (n = 72): 22.2%

# Risk difference (95% CI) for MMR at week 96 from subgroup analyses

- Ascimib
  - Confirmation
  - Avantage quelque soit lignes ITK
  - Surtout si absence efficacité



# Etude Assembl

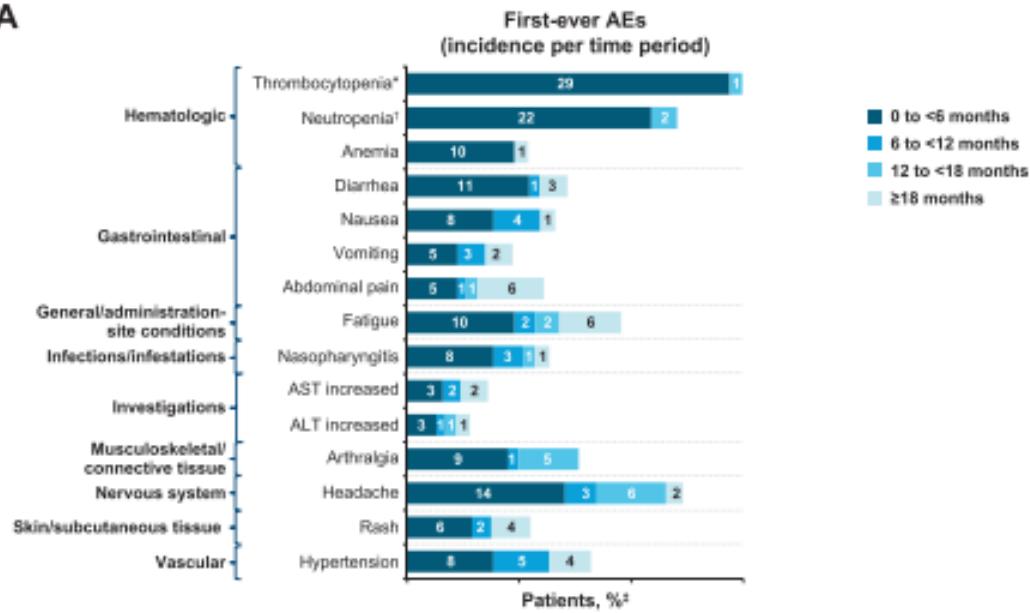
- Toxicités Asciminib
  - Thrombopénie 29%
  - HTA 13,5%
- Toxicités Bosutinib
  - Diarrhées 72,4%

Table 2. Adverse events regardless of relationship to study drug (reported in ≥5% of patients in any treatment arm).

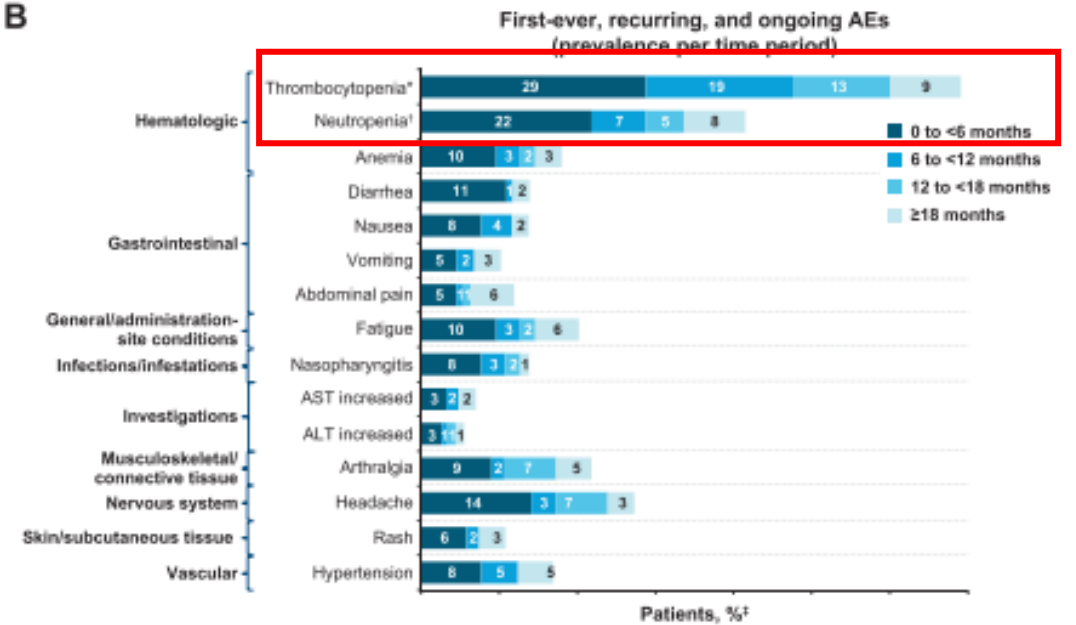
Event, n (%) <sup>a</sup>	Asciminib 40 mg twice daily (n = 156)		Bosutinib 500 mg once daily (n = 76)	
	All grades	Grade ≥ 3	All grades	Grade ≥ 3
Number of patients with ≥1 adverse event	142 (91.0)	88 (56.4)	74 (97.4)	52 (68.4)
Thrombocytopenia <sup>b</sup>	46 (29.5)	35 (22.4)	15 (19.7)	7 (9.2)
Neutropenia <sup>c</sup>	36 (23.1)	29 (18.6)	16 (21.1)	11 (14.5)
Headache	31 (19.9)	3 (1.9)	12 (15.8)	0
Fatigue	23 (14.7)	1 (0.6)	7 (9.2)	1 (1.3)
Hypertension	21 (13.5)	10 (6.4)	4 (5.3)	3 (3.9)
Arthralgia	20 (12.8)	1 (0.6)	3 (3.9)	0
Diarrhea	20 (12.8)	0	55 (72.4)	8 (10.5)
Nausea	18 (11.5)	1 (0.6)	35 (46.1)	0
Nasopharyngitis	17 (10.9)	0	3 (3.9)	0
Anemia	16 (10.3)	2 (1.3)	6 (7.9)	3 (3.9)
Abdominal pain	14 (9.0)	0	12 (15.8)	1 (1.3)
Pain in extremity	14 (9.0)	1 (0.6)	5 (6.6)	0
Rash	14 (9.0)	0	18 (23.7)	3 (3.9)
Asthenia	13 (8.3)	0	1 (1.3)	0
Cough	13 (8.3)	0	5 (6.6)	0
Back pain	12 (7.7)	1 (0.6)	3 (3.9)	1 (1.3)
Vomiting	12 (7.7)	2 (1.3)	20 (26.3)	0
Dizziness	11 (7.1)	0	2 (2.6)	0
Dyspepsia	11 (7.1)	0	3 (3.9)	0
Insomnia	11 (7.1)	0	1 (1.3)	0
Peripheral edema	11 (7.1)	0	2 (2.6)	0
Upper respiratory tract infection	11 (7.1)	1 (0.6)	4 (5.3)	0
Myalgia	10 (6.4)	0	2 (2.6)	0
Amylase increased	9 (5.8)	1 (0.6)	4 (5.3)	0
Aspartate aminotransferase increased	9 (5.8)	3 (1.9)	16 (21.1)	5 (6.6)
Muscle spasms	9 (5.8)	1 (0.6)	0	0
Constipation	8 (5.1)	0	4 (5.3)	0
Decreased appetite	8 (5.1)	0	6 (7.9)	0
Dry skin	8 (5.1)	0	6 (7.9)	0
Dyspnea	8 (5.1)	0	4 (5.3)	0
Lipase increased	8 (5.1)	6 (3.8)	5 (6.6)	4 (5.3)
Non-cardiac chest pain	8 (5.1)	2 (1.3)	1 (1.3)	0
Oropharyngeal pain	8 (5.1)	0	2 (2.6)	0
Pruritus	8 (5.1)	0	5 (6.6)	1 (1.3)
Rash maculopapular	8 (5.1)	0	2 (2.6)	1 (1.3)
Abdominal pain upper	7 (4.5)	0	5 (6.6)	1 (1.3)
Alanine aminotransferase increased	7 (4.5)	1 (0.6)	23 (30.3)	11 (14.5)
Pyrexia	6 (3.8)	2 (1.3)	6 (7.9)	1 (1.3)
Blood creatinine increased	5 (3.2)	0	5 (6.6)	0
Influenza-like illness	3 (1.9)	0	4 (5.3)	0
Hypophosphatemia	2 (1.3)	1 (0.6)	4 (5.3)	3 (3.9)

# Toxicités Asciminib

A



B



# Assembl

- EI de spécial intérêt
  - Effet cardiaque ?

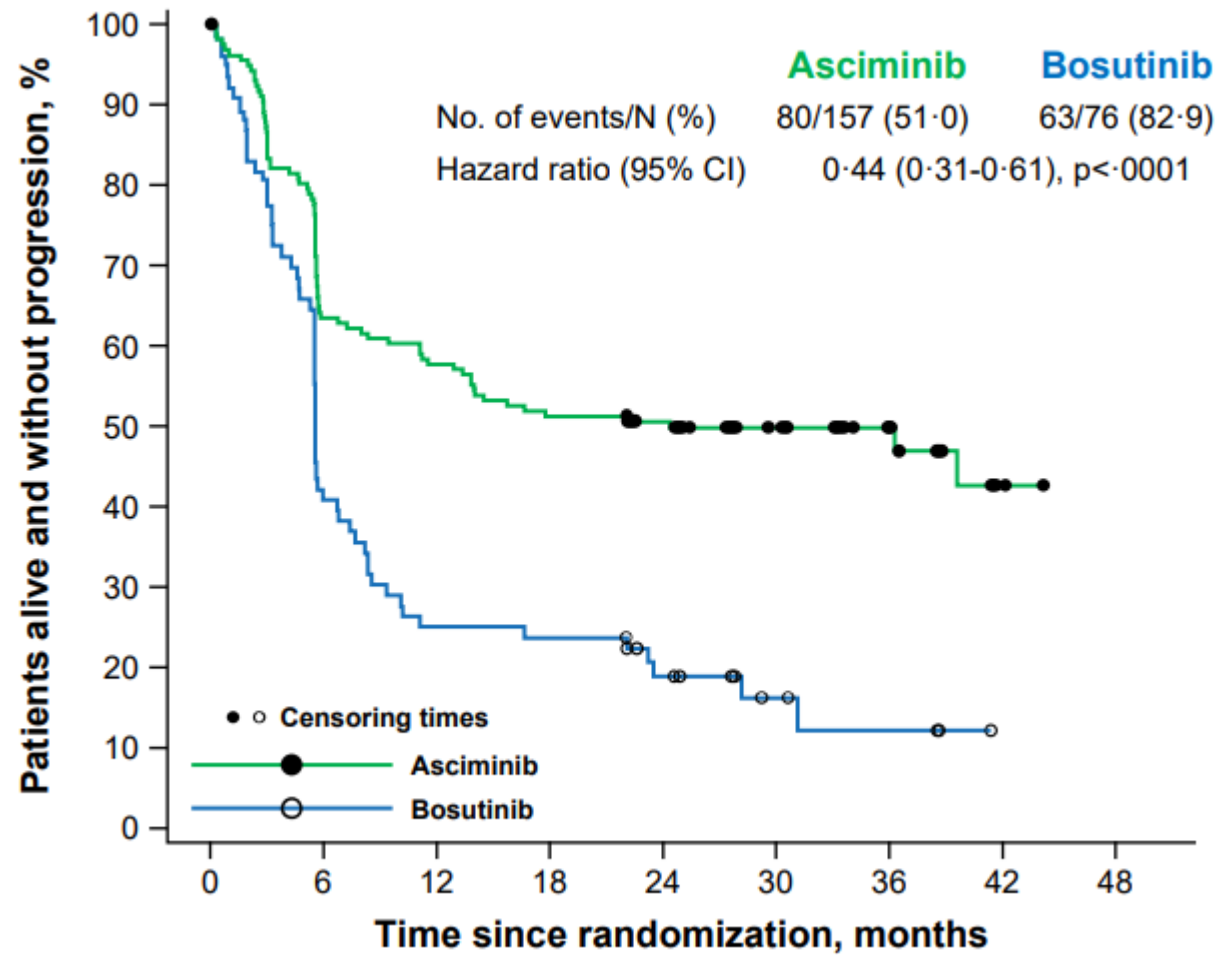
**Table 3.** EAIRs of adverse events of special interest.

<b>EAIR, n (per 100 patient-treatment years)<sup>a,b</sup></b>	<b>Asciminib 40 mg twice daily (n = 156)</b>	<b>Bosutinib 500 mg once daily (n = 76)</b>
Cardiac failure (clinical events)	3 (1.1)	1 (1.3)
Edema and fluid retention	16 (6.4)	7 (10.1)
Gastrointestinal toxicity	52 (26.6)	60 (319.2)
Hemorrhage	19 (7.4)	8 (11.1)
Hepatotoxicity (including AEs related to laboratory value abnormalities)	17 (6.8)	25 (40.8)
Hypersensitivity <sup>c</sup>	32 (14.0)	26 (48.2)
Pancreatic toxicity	13 (5.1)	7 (10.2)
QTc prolongation	6 (2.3)	1 (1.3)
Reproductive toxicity <sup>d</sup>	3 (1.1)	1 (1.3)

EAIR exposure-adjusted incidence rate.



# PFS



# Conclusion Asceembl

- Collectively, these updated results from ASCEMBL are a confirmation of the enduring clinical benefit of asciminib after longer exposure and continue to illustrate that asciminib has transformed CML treatment as a new standard of care for patients with CML-CP treated with  $\geq 2$  prior TKIs and support its ongoing development in earlier lines of therapy

# Asciminib développement

Asciminib en 1<sup>ère</sup> ligne: Asciminib monoT

Etude ASCEND IIT: Asciminib

Etude ASC4First: Asciminib vs autres ITK

Etude ASC4Start: Asciminib vs Nilotinib

Asciminib en 1<sup>ère</sup> ligne: Asciminib association avec Imatinib

Etude Asc4More: Asciminib + Imatinib si Sub optimal

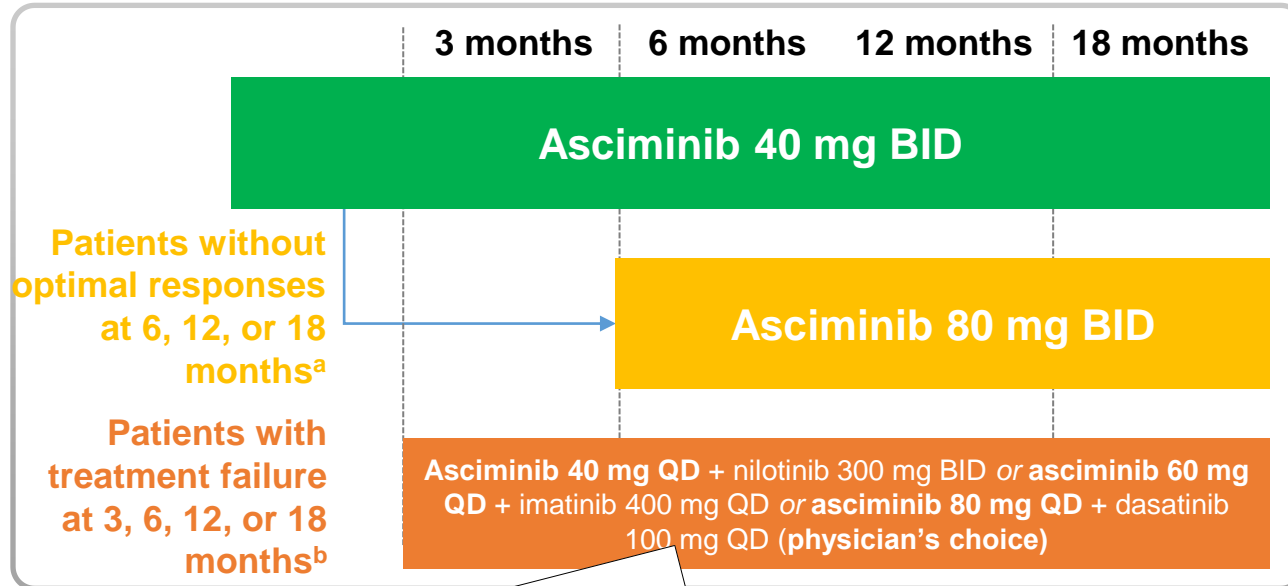
Asciminib dans LMC T315I

# ASCEND IIT : Asciminib in 1<sup>st</sup> line

**This resource is associated with abstract 79 at ASH 2022**

# Disposition

## Study design and interim analysis



**Co-primary endpoints: EMR or  $BCR::ABL1^{IS} \leq 10\%$  at 3 months and MMR by 12 months**

are here

**Protocol-specified interim analysis: EMR at 3 months**  
Data cutoff: July 15<sup>th</sup>, 2022

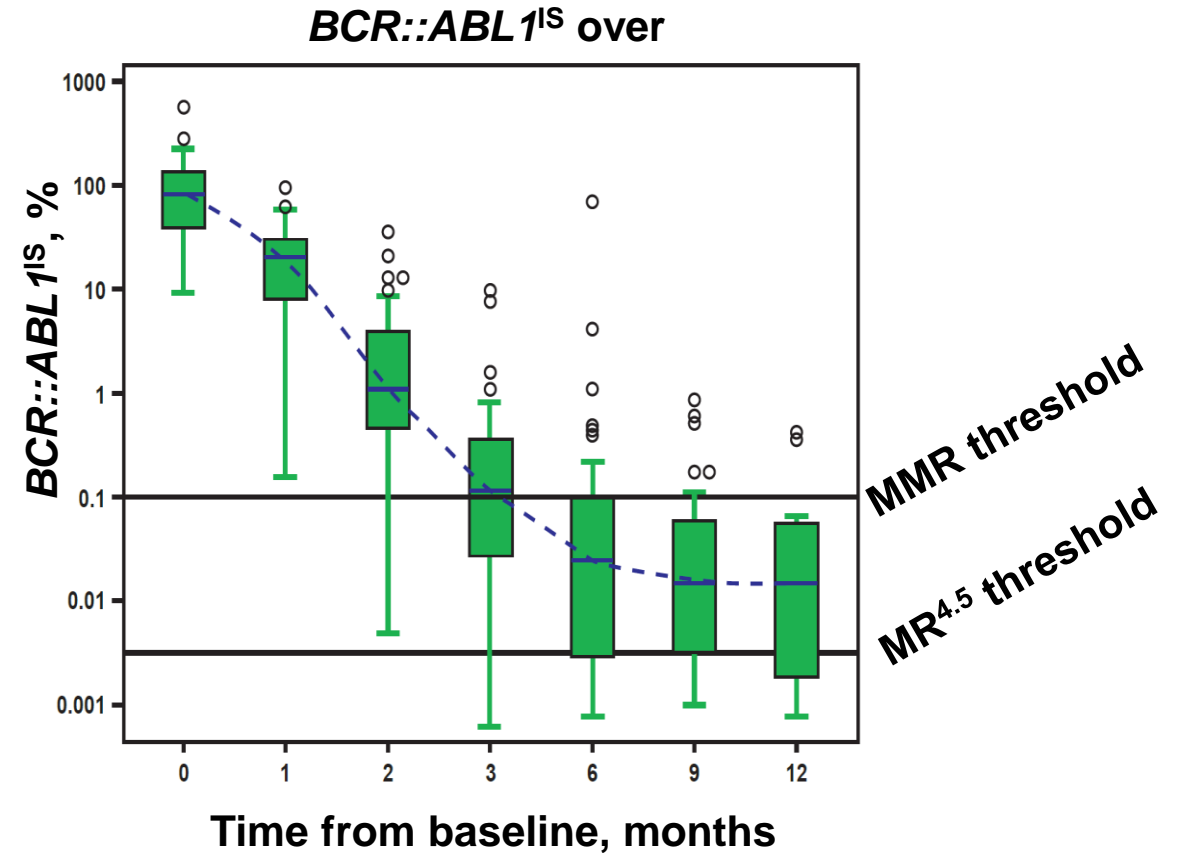
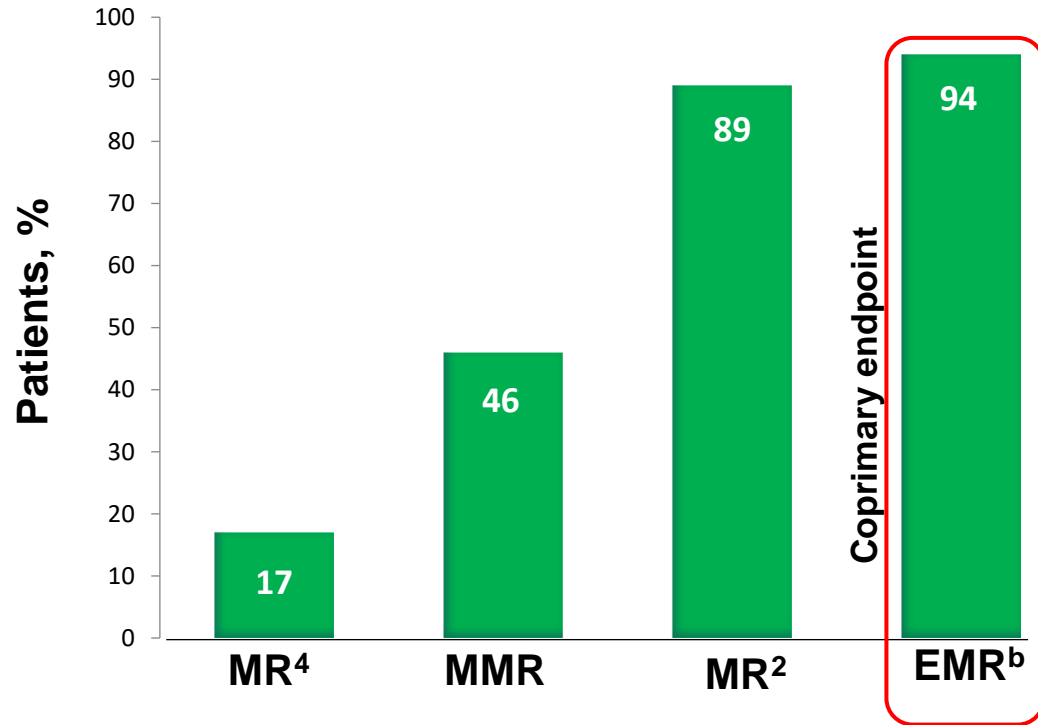
Median follow-up: 10 months

- **79/100 patients** were registered by the data cutoff<sup>c</sup>
- **3 patients with suboptimal response** (per 2020 ELN recommendations)<sup>a</sup> underwent dose escalation
- **9 patients discontinued** treatment due to AEs (n=5)<sup>d</sup>, withdrawal of consent (n=1), loss to follow up (n=1), and asciminib resistance (n=2)<sup>e</sup>

<sup>a</sup>  $BCR::ABL1^{IS} > 10\%$  at 3 or 6 months and  $BCR::ABL1^{IS} > 1\%$  at 12 or 18 months, respectively.  
<sup>b</sup>  $BCR::ABL1^{IS} > 10\%$  at 3 or 6 months and  $BCR::ABL1^{IS} > 1\%$  at 12 or 18 months.  
<sup>c</sup> ASCEND will enroll ≈100 patients over 15 Australian and New Zealand sites.  
<sup>d</sup> Included persistent grade 4 cytopenia requiring HSCT (n=1) and recurrent asymptomatic lipase elevations (n=4).  
<sup>e</sup> 1 due to loss of MMR at 9 months after reaching a nadir of 0.067% at 6 months without evidence of kinase domain or myristoyl pocket mutations and 1 due to transformation to CML-BP at 6 months with myristoyl pocket mutations A337T (40%), A337V (10%), and P465S (10%), having previously achieved  $BCR::ABL1^{IS}$  of 0.37% at 3 months.  
 Yeung DT, et al. ASH2022 Annual Meeting; December 10-13, 2022; New Orleans, LA, and virtual. Abstract 79.

# Molecular responses at 3 months and $BCR::ABL1^{IS}$ over time with asciminib

**Molecular responses at 3 months (n=63)<sup>a</sup>**



- **59 of 63** evaluable patients (or **94%**) receiving **asciminib** achieved **EMR**
- A **high proportion of deep molecular responses** were achieved at **3 months** with **asciminib**. Of 63 evaluable patients, **89%** achieved **MR<sup>2</sup>**, **46%** achieved **MMR**, and **17%** achieved **MR<sup>4</sup>** or better

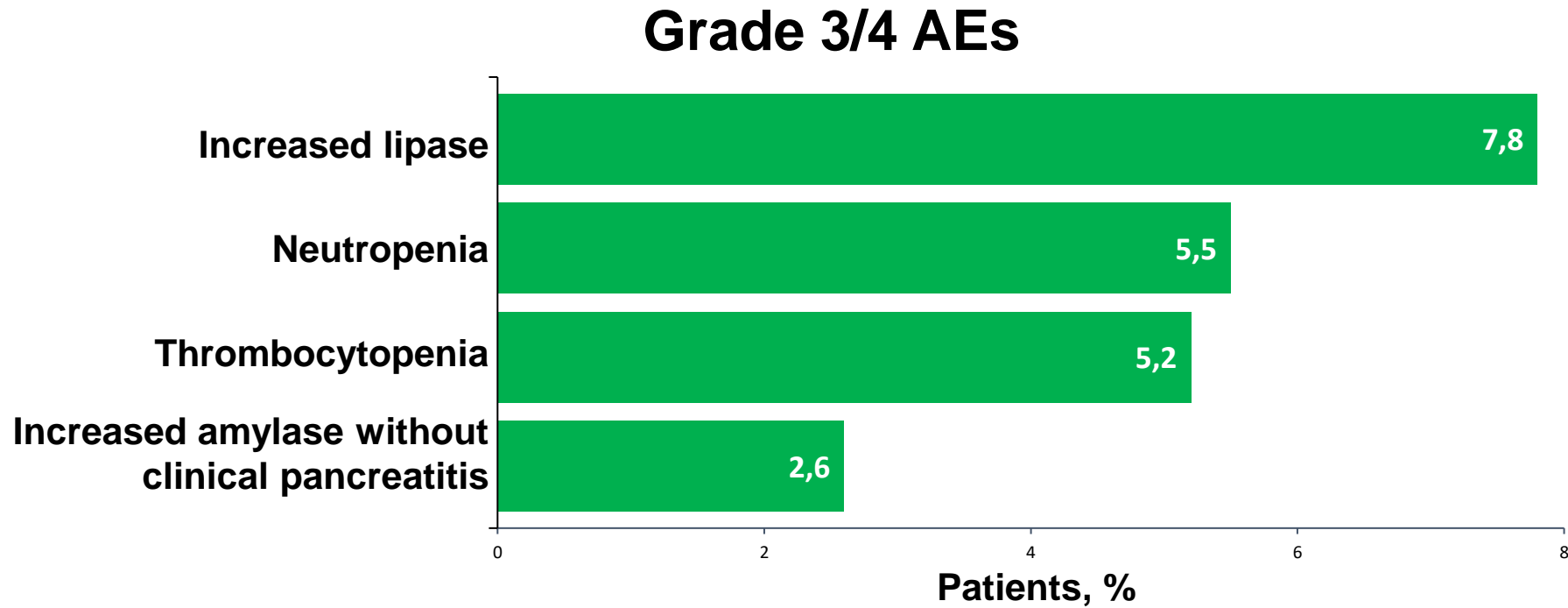
MR<sup>2</sup>,  $BCR::ABL1^{IS} \leq 1\%$ ; MR<sup>4</sup>,  $BCR::ABL1^{IS} \leq 0.01\%$ ; MR<sup>4.5</sup>,  $BCR::ABL1^{IS} \leq 0.0032\%$ .

<sup>a</sup> All patients with 3 months of follow-up were included in this analysis.

<sup>b</sup> Four patients were nonresponders: 1 missed this assessment and 3 withdrew from the study by this time point.

Yeung DT, et al. ASH2022 Annual Meeting; December 10-13, 2022; New Orleans, LA, and virtual. Abstract 79.

Most frequent grade 3/4 AEs

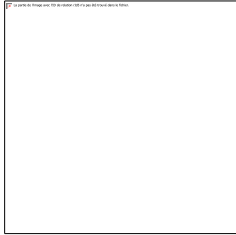


- Other **grade 3 AEs** included **increased AST, increased ALT, anemia, back pain, abdominal pain, and infection**, each reported once

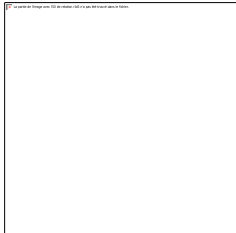
ALT, alanine aminotransferase; AST, aspartate aminotransferase.

Yeung DT, et al. ASH2022 Annual Meeting; December 10-13, 2022; New Orleans, LA, and virtual. Abstract 79.

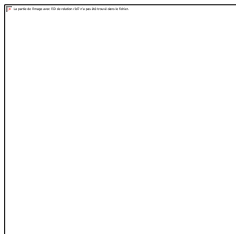
## ASCEND abstract conclusions



After a median follow-up of 10 months, **asciminib** demonstrated **promising efficacy and favorable tolerability** as frontline treatment for patients with CML-CP



**Most patients** achieved **EMR**, **nearly half achieved MMR**, and **many achieved MR<sup>4</sup> or better at 3 months**, supporting the potential for **treatment-free remission** with **asciminib**



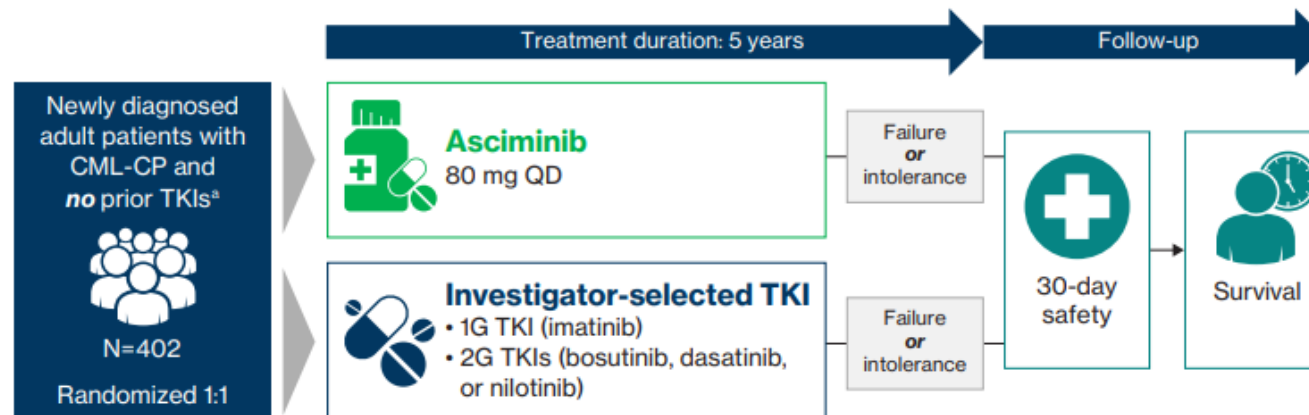
**Safety results were encouraging** with the **most common AEs being cytopenias and lipase elevations**, which appear to be ABL1 inhibitor class effects



# ASC4FIRST: A Phase III Study of Asciminib vs Investigator-Selected Tyrosine Kinase Inhibitor in Patients with Newly Diagnosed Chronic Myeloid Leukemia in Chronic Phase (CML-CP)

## ASC4FIRST Trial Study Design

### A Phase III Study of Asciminib vs Approved TKIs in 1L CML-CP

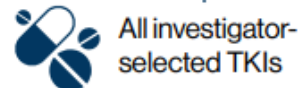
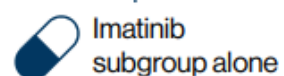


#### Primary Endpoints<sup>b</sup>

##### Efficacy



Asciminib vs

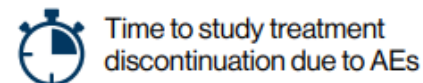


#### Secondary Endpoints<sup>c</sup>

##### Efficacy and Safety



&



# Asc4First study

## Key Inclusion Criteria



Adults with CML-CP



CML-CP within 3 months of diagnosis that meets ELN criteria<sup>6</sup>



ECOG performance status of 0 or 1



Typical BCR-ABL1 transcript at screening

## Key Exclusion Criteria



Previous treatment with anticancer agents<sup>a,d</sup>



Impaired cardiac function or repolarization abnormality



Cytopathologically confirmed CNS infiltration



History of acute<sup>e</sup>/chronic pancreatitis



History of acute/chronic liver disease



Will enroll  
**≈402 patients**

in



**161 sites**

in

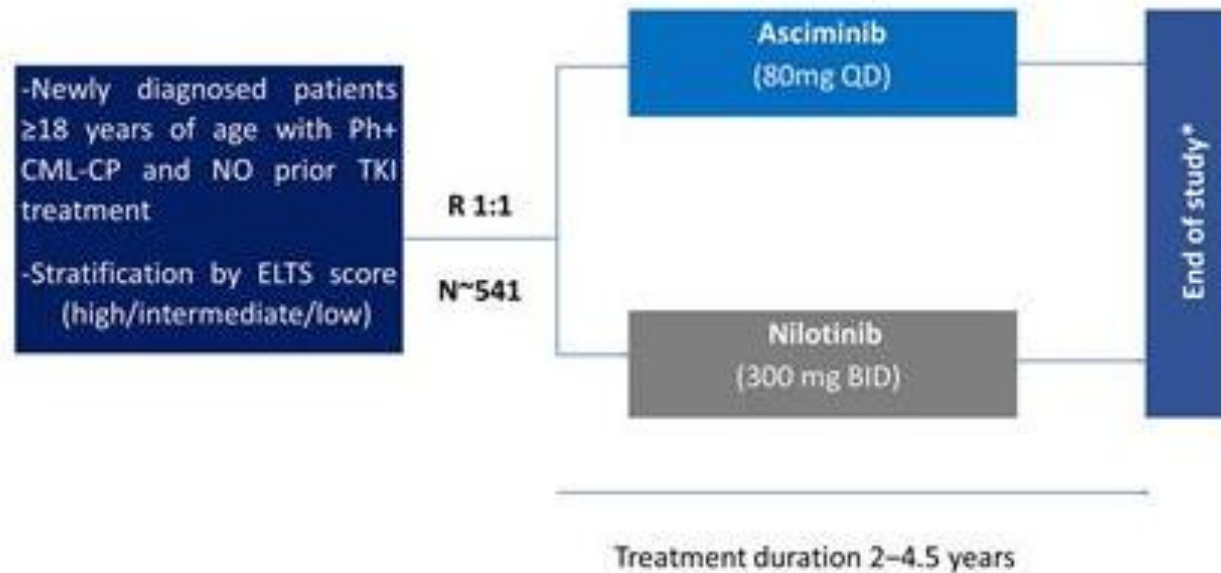


**31 countries**



Etude en cours

**ASC4START**: A Phase IIIb, Open-Label, Randomized Study of Tolerability and Efficacy of Asciminib Versus Nilotinib in Patients with Newly Diagnosed Philadelphia Chromosome-Positive Chronic Myelogenous Leukemia in Chronic Phase



Etude en cours

Efficacy and Safety Results from **ASC4MORE**, a Randomized Study of Asciminib (ASC) Add-on to Imatinib (IMA), Continued IMA, or Switch to Nilotinib (NIL) in Patients (Pts) with Chronic-Phase Chronic Myeloid Leukemia (CML-CP) Not Achieving Deep Molecular Responses (DMRs) with  $\geq 1$  Year of IMA

- Randomisation

- Asciminib 40 mg + Imatinib 400 mg
- Asciminib 60 mg + Imatinib 400 mg
- Imatinib 400 mg
- Nilotinib 300 mg x2

RM4 at W48

42,9%

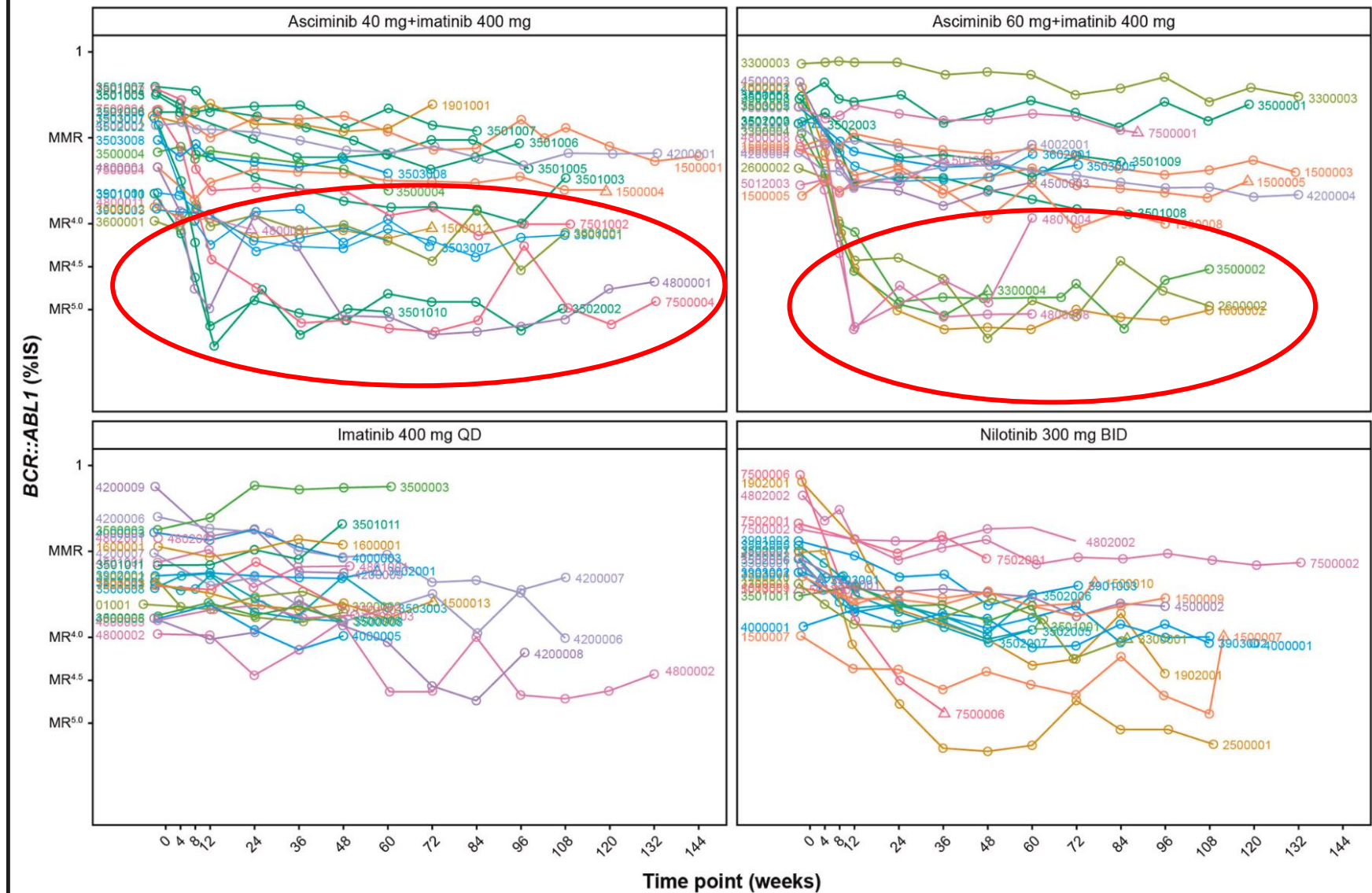
28,6%

0%

23,8%

# Asc4more

Figure. *BCR::ABL1*<sup>IS</sup> Over Time for Randomized Treatments



% patients RM profonde  
plus importante  
Avec l'association



# Asc4more: tolérance

Table. AEs by Preferred Term (≥2 Pts in Any Treatment Arm)

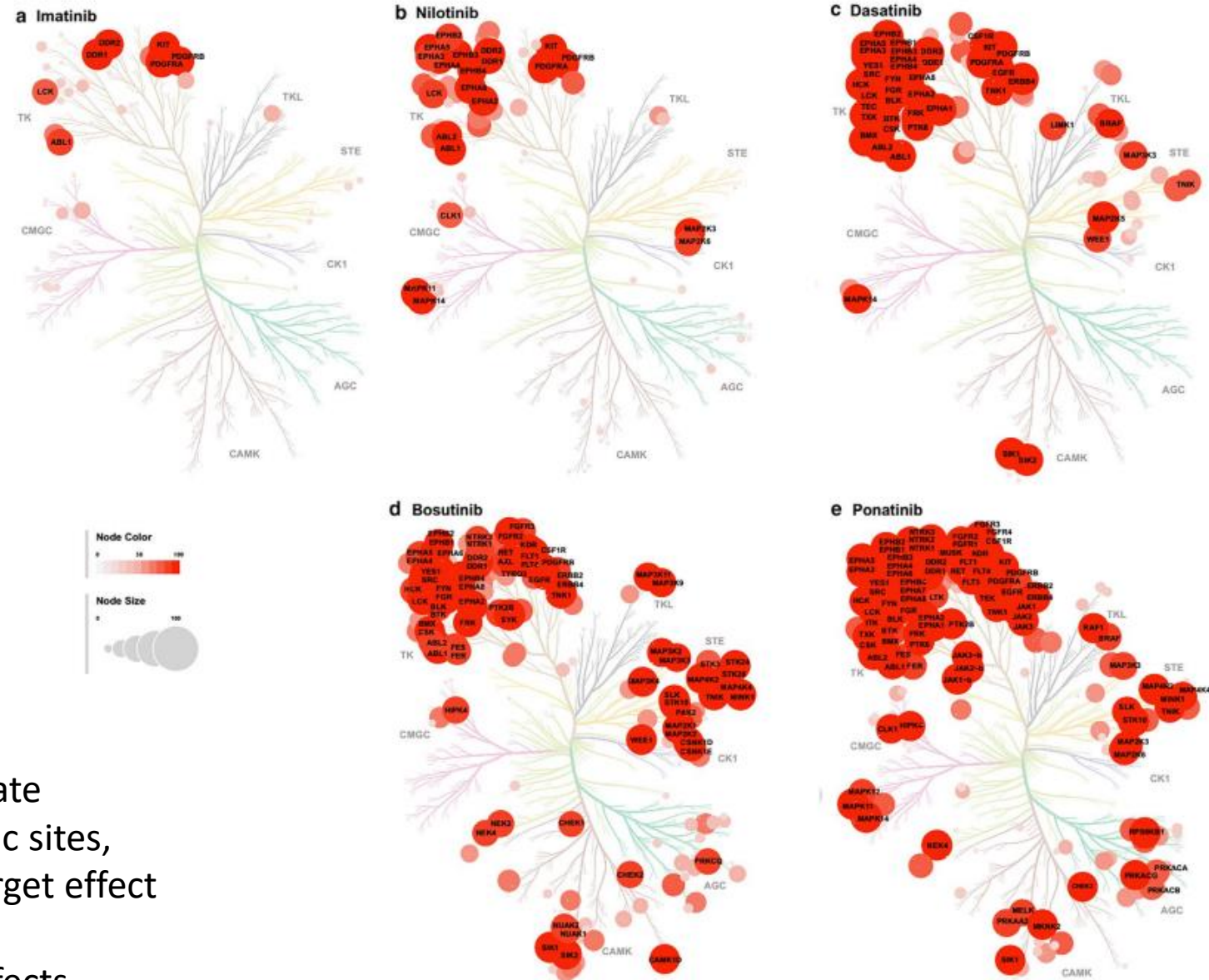
Preferred term	Asciminib 40 mg QD + IMA n=21		Asciminib 60 mg QD + IMA n=21		IMA 400 mg QD n=20		NIL 300 mg BID n=21	
	All grade n (%)	Grade ≥3 n (%)	All grade n (%)	Grade ≥3 n (%)	All grade n (%)	Grade ≥3 n (%)	All grade n (%)	Grade ≥3 n (%)
Pts with ≥1 event	20 (95.2)	7 (33.3)	19 (90.5)	7 (33.3)	14 (70.0)	1 (5.0)	21 (100)	9 (42.9)
Alopecia	2 (9.5)	0	3 (14.3)	0	0	0	1 (4.8)	0
Dry skin	2 (9.5)	0	3 (14.3)	0	0	0	0	0
Lipase increased	3 (14.3)	0	3 (14.3)	1 (4.8)	3 (15.0)	0	2 (9.5)	2 (9.5)
Nausea	7 (33.3)	0	3 (14.3)	0	2 (10.0)	0	3 (14.3)	0
Blood creatine phosphokinase increased	1 (4.8)	0	2 (9.5)	1 (4.8)	2 (10.0)	0	1 (4.8)	0
Blood creatinine increased	2 (9.5)	0	2 (9.5)	0	0	0	0	0
COVID-19	3 (14.3)	0	2 (9.5)	0	2 (10.0)	0	3 (14.3)	1 (4.8)
Diarrhea	5 (23.8)	0	2 (9.5)	1 (4.8)	3 (15.0)	0	1 (4.8)	0
Fatigue	3 (14.3)	1 (4.8)	2 (9.5)	0	0	0	2 (9.5)	0
Hypophosphatemia	2 (9.5)	0	2 (9.5)	0	3 (15.0)	1 (5.0)	1 (4.8)	0
Alanine aminotransferase increased	1 (4.8)	0	1 (4.8)	0	0	0	5 (23.8)	0
Amylase increased	1 (4.8)	0	1 (4.8)	0	2 (10.0)	0	1 (4.8)	1 (4.8)
Aspartate aminotransferase increased	0	0	1 (4.8)	0	0	0	3 (14.3)	0
Back pain	0	0	1 (4.8)	0	0	0	2 (9.5)	2 (9.5)
Blood cholesterol increased	0	0	1 (4.8)	0	0	0	3 (14.3)	0
Blood phosphorus decreased	2 (9.5)	0	1 (4.8)	0	0	0	0	0
Headache	3 (14.3)	0	1 (4.8)	0	0	0	2 (9.5)	0
Hypokalemia	2 (9.5)	1 (4.8)	1 (4.8)	0	0	0	0	0
Myalgia	5 (23.8)	1 (4.8)	1 (4.8)	0	1 (5.0)	0	2 (9.5)	0
Neutropenia	2 (9.5)	2 (9.5)	1 (4.8)	0	0	0	0	0
Pancreatitis	1 (4.8)	0	1 (4.8)	1 (4.8)	0	0	2 (9.5)	0
Paresthesia	0	0	1 (4.8)	0	2 (10.0)	0	0	0
Pruritus	4 (19.0)	0	1 (4.8)	0	0	0	2 (9.5)	0
Rash	2 (9.5)	0	1 (4.8)	0	1 (5.0)	0	8 (38.1)	1 (4.8)
Urinary tract infection	3 (14.3)	1 (4.8)	1 (4.8)	0	1 (5.0)	0	0	0
Vomiting	2 (9.5)	1 (4.8)	1 (4.8)	0	2 (10.0)	0	1 (4.8)	0
Abdominal pain	0	0	0	0	0	0	2 (9.5)	0
Abdominal pain upper	2 (9.5)	2 (9.5)	0	0	0	0	2 (9.5)	0
Blood bilirubin increased	1 (4.8)	0	0	0	0	0	3 (14.3)	0
Conjunctivitis	2 (9.5)	0	0	0	1 (5.0)	0	0	0
Constipation	1 (4.8)	0	0	0	1 (5.0)	0	3 (14.3)	0
Dizziness	1 (4.8)	0	0	0	0	0	2 (9.5)	0
Folliculitis	0	0	0	0	0	0	3 (14.3)	0
Gamma-glutamyltransferase increased	1 (4.8)	0	0	0	0	0	2 (9.5)	1 (4.8)
Gilbert syndrome	0	0	0	0	0	0	3 (14.3)	2 (9.5)
Hyperglycemia	0	0	0	0	0	0	2 (9.5)	0
Hypertension	1 (4.8)	0	0	0	1 (5.0)	0	4 (19.0)	2 (9.5)
Hypertriglyceridemia	2 (9.5)	0	0	0	0	0	0	0
Hypocalcemia	0	0	0	0	2 (10.0)	0	0	0
Muscle spasms	2 (9.5)	0	0	0	1 (5.0)	0	1 (4.8)	0
Tinnitus	2 (9.5)	0	0	0	0	0	0	0

Conclusion: Association prometteuse

# Asciminib dans LMC T315I

- Posologie requise 200 mg/j
- N = 48
  - 60% avait reçu Ponatinib
- RMM at W24      42%
- RMM at W96      48,9%
- Tolérance : idem dose 80 mg/j.

Inhibitions des kinases par ITK responsables des effets « off-target »



As it specifically binds to the myristate pocket, rather than other orthosteric sites, asciminib has a highly specific on-target effect against the ABL1 kinase without any significant off target effects



# conclusion

- Asciminib: nouvelle molécule et mode d'action nouveau
- Résultats très prometteur dès la 3<sup>ème</sup> ligne
- Résultats très prometteurs en 1<sup>ère</sup> ligne et en association
- Molécule qui va challenger le Ponatinib +++ car peu d'effets off-target
  
- Attention: déjà des mutations de résistances décrites.