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Farmacoeconomía de la profilaxis de las IFI en pacientes oncohematológicos

Carlos Rubio Terrés

Simposio Profilaxis de las infecciones fúngicas invasivas en el paciente oncohematológico

Zaragoza, 24 de septiembre de 2009

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Antifúngicos con la indicación de profilaxis

Fluconazol (iv) — Candidiasis

Prevención de infecciones fúngicas en pacientes con neoplasias que estén predispuestos a tales infecciones como consecuencia de la quimioterapia o radioterapia.

Micafungina (iv) — Candidiasis

Profilaxis de la infección por *Candida* en pacientes sometidos a trasplante alogénico de células precursoras hematopoyéticas o en pacientes que se espera que puedan presentar neutropenia (recuento absoluto de neutrófilos < 500 células/microlitro(µl)) durante 10 o más días.

Itraconazol (oral) — Candidiasis + Aspergilosis

Como profilaxis en las infecciones fúngicas sistémicas, en las que previamente se ha visto su sensibilidad a itraconazol y cuando los tratamientos estándar no se consideran apropiados, en pacientes con neoplasias hematológicas malignas o transplantados de médula ósea y de los que cabe esperar que lleguen a ser neutropénicos (es decir, < 500 células/µl). Actualmente no se dispone de datos de eficacia clínica suficientes relacionados con la prevención de aspergilosis.

Posaconazol (oral) — Candidiasis + Aspergilosis

Noxafil está también indicado en la profilaxis de infecciones fúngicas invasivas en los siguientes pacientes:

- Pacientes que estén recibiendo quimioterapia de remisión-inducción para leucemia mieloide aguda (LMA) o síndromes mielodisplásicos (SMD), que se espera desarrollen neutropenia prolongada y que presentan alto riesgo de desarrollar infecciones fúngicas invasivas;
- Receptores de trasplante progenitor hematopoyético (TPH) que están recibiendo dosis altas de terapia inmunosupresora para la enfermedad injerto contra huésped, y que presentan alto riesgo de desarrollar infecciones fúngicas invasivas.

Profilaxis de las IFI en el paciente oncohematológico

- Metaanálisis
- Robenshtok et al. J Clin Oncol 2007; 25: 5471-89
- Disminuye significativamente la mortalidad
- vs placebo, no tratamiento o no administración de antifúngicos sistémicos
- RR= 0,84 (IC95% 0,74; 0,95)

IFI: infección fúngica invasiva

Table 1. Infectious Diseases Society of America, United States Public Health Service Grading System for ranking recommendations.

Category, grade	Definition
Strength of recommendation	
A	Good evidence to support a recommendation for use
B	Moderate evidence to support a recommendation for use
C	Poor evidence to support a recommendation
D	Moderate evidence to support a recommendation against use
E	Good evidence to support a recommendation against use
Quality of evidence	
I	Evidence from ≥1 properly randomized, controlled trial
II	Evidence from ≥1 well-designed clinical trial, without randomization; from cohort or case-controlled analytic studies (preferably from >1 center); from multiple time-series; or from dramatic results from uncontrolled experiments
III	Evidence from opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

Treatment of Aspergillosis: Clinical Practice Guidelines of the Infectious Diseases Society of America **Clinical Infectious Diseases 2008; 46:327–60**

PROPHYLAXIS AGAINST INVASIVE ASPERGILLOSIS

Key recommendation. **Antifungal prophylaxis with posaconazole can be recommended in HSCT recipients with GVHD who are at high risk for invasive aspergillosis and in patients with acute myelogenous leukemia or myelodysplastic syndrome who are at high risk for invasive aspergillosis (A-I). Itraconazole may be effective, but tolerability limits its use (B-I).** Further investigation of antifungal prophylaxis is recommended in this population and other high-risk groups.

Antifungal prophylaxis in leukemia patients

- **Allogeneic hematopoietic stem cell transplantation**
  - Fluconazole 400 mg qd iv/oral: AI[2]
  - Itraconazole 200 mg IV followed by oral solution 200 mg bid: BI[1,2,3]
  - Posaconazole 200 mg tid oral: AI[2,3]
  - Micafungin 50 mg qd iv: CI
  - Polyene[4] iv: CI
- **Induction chemotherapy of acute leukemia**
  - Fluconazole 50-400 mg qd iv/oral: CI[2]
  - Itraconazole oral solution 2.5 mg/kg bid: CI[1,2,3]
  - Posaconazole 200 mg tid oral: AI[2,3]
  - Candins iv: insufficient data
  - Polyene[4] iv: CI

1 may be limited by drug interactions and/or patient tolerability
2 azoles should not be used empirically in case of prior azole prophylaxis
3 it is recommended to monitor serum drug concentrations
4 includes low doses of conventional amphotericin B and lipid formulations.
The ECIL recommendation for aerosolized amphotericin B is DI

1st European Conference on Infection in Leukemia

Primary prophylaxis of invasive fungal infections in patients with hematologic malignancies. Recommendations of the Infectious Diseases Working Party of the German Society for Haematology and Oncology

Haematologica 2009; 94:113-122.

Oliver A. Cornely,[1,2] Angelika Böhme,[3] Dieter Buchheidt,[4] Hermann Einsele,[5] Werner J. Heinz,[5] Meinolf Karthaus,[6] Stefan W. Krause,[7] William Krüger,[8] Georg Maschmeyer,[9] Olaf Penack,[10] Jörg Ritter,[11] Markus Ruhnke,[12] Michael Sandherr,[13] Michal Sieniawski,[14] Jörg-Janne Vehreschild,[1] Hans-Heinrich Wolf,[15] and Andrew J. Ullmann[16]

Table 2B. Recommended antifungal prophylaxis in allogeneic hematopoietic stem cell recipients.

Drug	Dosage	Level of evidence
Fluconazole	400 mg qd po	A I*
Posaconazole oral suspension	200 mg tid po	A I§
Itraconazole oral solution	400 mg qd po	C I
Micafungin	50 mg qd iv	C I‡

**Prior to GvHD only; §after onset of severe GvHD; ‡during neutropenia only.*

GvHD: reacción del injerto contra el huésped

Primary prophylaxis of invasive fungal infections in patients with hematologic malignancies. Recommendations of the Infectious Diseases Working Party of the German Society for Haematology and Oncology

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Table 2A. Recommended antifungal prophylaxis in patients with neutropenia (<500 cells/μL for more than 7 days).

Drug	Dosage	Level of evidence
Posaconazole oral suspension	200 mg tid po	A I[1]
Amphotericin B, liposomal	12.5 mg biw inhalation	B II[2]
Amphotericin B, liposomal	50 mg q 48h iv	C II
Itraconazole oral solution	2.5-7.5 mg/kg/d	C I
Fluconazole	400 mg qd po	C I
Itraconazole capsules, any formulation	Any dose	C I
Caspofungin	50 mg qd iv	C I
Amphotericin B, deoxycholate	Any dose iv	E I
Amphotericin B, deoxycholate	20 mg qd inhalation	E I

[1]Recommended in AML/MDS remission induction chemotherapy only.
[2]All patients received fluconazole, dose and route were not reported.

AML: Leucemia mieloide aguda
MDS: Síndrome mielodisplásico

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¿Eficiencia comparada?

- Pacientes con quimioterapia con alto riesgo de neutropenia prolongada y de IFI
- Receptores de trasplante progenitor hematopoyético (TPH) y alto riesgo de IFI

Fluconazol

Micafungina

Itraconazol

Posaconazol

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Análisis farmacoeconómicos: Profilaxis IFI ptes oncohematológicos

- Revisiones sistemáticas
  - Dixon et al. *PharmacoEconomics* 2004; 22: 421-33
  - Johnson et al. *Exp Opin Pharmacother* 2005; 6: 2617-32
  - Moeremans et al. *Exp Opin Pharmacother* 2006; 7: 1931-43

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Fluconazol vs NP

28. Schaffner A, Schaffner M. Effect of prophylactic fluconazole on the frequency of fungal infections, amphotericin B use, and health care costs in patients undergoing intensive chemotherapy for hematologic neoplasias. J Infect Dis 1995; 172: 1035-41

Schaffner and Schaffner[28] (CCA, Switzerland)	Prophylaxis of infections in patients undergoing intensive chemotherapy for hematologic neoplasias	FLU 400mg daily vs NP	Amphotericin use, fungal infection and time to fungal infection	Drug acquisition costs Treatment of infections Tests and investigation Hospitalisation	0.71	Cost per patient was $US35 440 (FLU) vs $US31 559 (NP) [p = 0.06]	1993

Quimioterapia:
FLU vs NP
CCA (ECA)
Coste / paciente= 35.000 vs 31.000 US$

FLU: fluconazol
NP: no profilaxis
CCA: análisis de costes y consecuencias

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Fluconazol vs comb.

33. Wakerly L, Craig AM, Malek M, et al. Fluconazole versus oral polyenes in the prophylaxis of immunocompromised patients: a cost-minimization analysis. J Hosp Infect 1996; 33: 35-48

Study (type of economic evaluation and country)	Condition(s)	Interventions[a]	Primary outcome measures	Cost components used	Technical quality score[b]	Results	Year of costing
Wakerly et al.[33] (CMA, UK)	Prophylaxis against fungal infections in patients receiving chemotherapy and in bone marrow transplant recipients	FLU 100mg od vs nystatin 400 000 units plus AMB 40mg (NAM) od vs FLU 100mg od plus NAM (FL-NAM) vs NP; all treatments were for 7 days	Unclear	Drug acquisition costs Investigations Treatment of infections Hospital costs[e]	0.76	For chemotherapy patients, the literature-based model gave costs of £567 (FLU), £586 (NAM], £606 (FL-NAM) and £870 (NP), assuming treatment of superficial infections with FLU. Comparative figures for the opinion-based model were £951, £826, £833, £1357. For bone marrow transplant recipients, the literature-based model gave costs of £805 (FLU), £961 (NAM), £883 (FL-NAM) and £1043 (NP), assuming treatment of superficial infections with FLU. Comparative figures for the opinion-based model were £1609, £1668, £1529, £2332	1995

Trasplante de médula ósea:
FLU vs NAM vs FL-NAM vs NP
AMC (modelo)
FLU fue la opción menos costosa

AMB: anfotericina B
FLU: fluconazol
NAM: nistatina + AMB
NP: no profilaxis

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Micafungina vs Fluconazol

Sohn HS, Lee TJ, Kim J, Kim D. Cost-effectiveness analysis of micafungin versus fluconazole for prophylaxis of invasive fungal infections in patients undergoing hematopoietic stem cell transplantation in Korea. Clin Ther 2009; 31: 1105-15.

Micafungin treatment, compared with fluconazole, saved KW 95,511,000, increased the number of infection-free patients by 0.5, and saved 4.8 life-years per 100 patients. Results with micafungin as the dominant strategy were found to be robust in sensitivity analyses for several parameters, including treatment success and failure rates; mortality risk ratio; and costs for general care, empiric therapy, and acute antifungal therapy.

TPH:
MIC vs FLU
ACE (modelo)
Más pacientes sin IFI con MIC
MIC es dominante frente a FLU

TPH: trasplante de progenitor hematopoyético

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Micafungina vs Fluconazol

Schonfeld W, Wang Cheng J, Tong KB, Seifeldin R. Cost-effectiveness analysis of antifungal prophylaxis in patients undergoing hematopoietic stem cell transplantation. Clin Ther 2008; 30: 964-73.

Total hospital costs per patient were USD121,098 and USD124,957 in micafungin and fluconazole recipients, respectively-a difference of USD3,859. The bootstrapping analysis found that micafungin prophylaxis was cost-saving in 72.4% of the samples compared with 9.2% with fluconazole prophylaxis.

TPH:
MIC vs FLU
ACE (ECA)
La profilaxis con MIC generó ahorros vs FLU en el 72,4% de las simulaciones

TPH: trasplante de progenitor hematopoyético

EC: Posaconazol vs FLU/ITRA

Posaconazole vs. Fluconazole or Itraconazole Prophylaxis in Patients with Neutropenia

Cornely 2007
N Engl J Med 2007;356:348-59.

A total of 304 patients were randomly assigned to receive posaconazole, and 298 patients were randomly assigned to receive fluconazole (240) or itraconazole (58). Proven or probable invasive fungal infections were reported in 7 patients (2%) in the posaconazole group and 25 patients (8%) in the fluconazole or itraconazole group (absolute reduction in the posaconazole group, −6%; 95% confidence interval, −9.7 to −2.5%; P<0.001), fulfilling statistical criteria for superiority. Significantly fewer patients in the posaconazole group had invasive aspergillosis (2 [1%] vs. 20 [7%], P<0.001). Survival was significantly longer among recipients of posaconazole than among recipients of fluconazole or itraconazole (P=0.04). Serious adverse events possibly or

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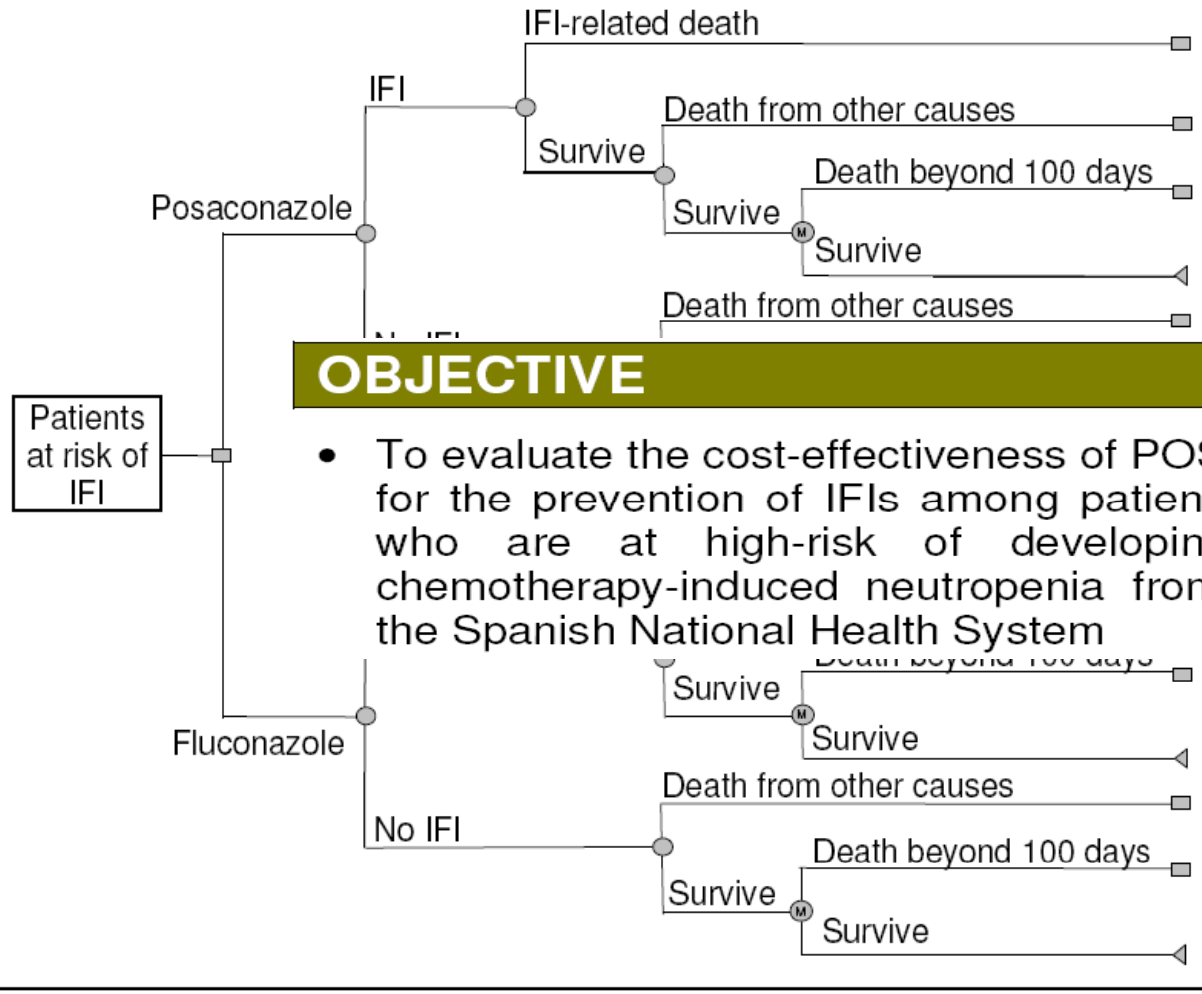
Posaconazol vs FLU/ITRA

Figure 1: Decision-tree model of POS versus SAT for the prevention of IFIs among neutropenic patients



OBJECTIVE

- To evaluate the cost-effectiveness of POS compared with SAT for the prevention of IFIs among patients with AML or MDS who are at high-risk of developing an IFI due to chemotherapy-induced neutropenia from the perspective of the Spanish National Health System

Grau S,
de la Cámara R,
et al, 2008

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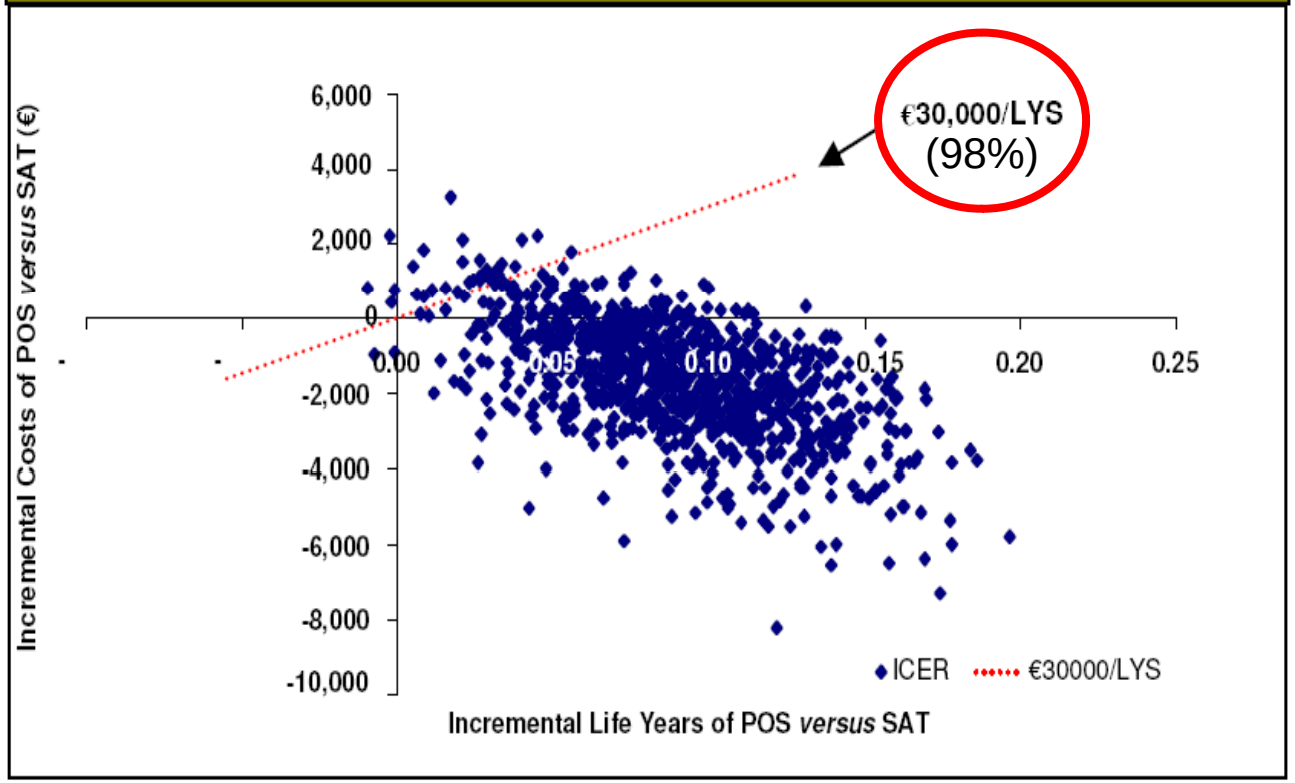
Posaconazol vs FLU/ITRA

Probability of 98% that the ICER ratio for POS versus SAT is below an estimated €30,000 per life year saved threshold

Grau S,
de la Cámara R,
et al, 2008

Figure 2: Scatter plot of 1,000 incremental cost and incremental life-years pairs for POS vs SAT



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Comparative cost-effectiveness of posaconazole versus fluconazole or itraconazole prophylaxis in patients with prolonged neutropenia

Curtis D. Collins, Jeffrey J. Ellis, and Daniel R. Kaul

Purpose. A cost-effectiveness analysis was performed to investigate the financial impact of using posaconazole versus fluconazole or itraconazole prophylaxis in patients with prolonged neutropenia.

Methods. A decision-analytic model was developed from a hospital perspective based on the use of posaconazole versus fluconazole or itraconazole prophylaxis in patients with prolonged neutropenia (i.e., longer than 7–10 days). Data reported in a multicenter study, medication-cost information, and reports of costs to treat invasive fungal infections were used to accurately populate the model. Sensitivity analyses enhanced the robustness of the model through variation of all probabilities and costs.

Results. In the base case, patients initiated on posaconazole displayed a 45% reduction in overall cost as compared with patients initiated on fluconazole or itraconazole ($3051 versus $5529, respectively). Sensitivity analyses determined that univariate changes in all model variables, including medication cost, duration of therapy, and cost of treating invasive fungal infections, did not impact overall results. A Monte Carlo simulation analysis found that use of posaconazole remains the best overall prophylactic strategy when taking into consideration the potential variance in all model assumptions. Posaconazole dominated the use of fluconazole or itraconazole because of previously demonstrated lower incidence of breakthrough fungal infections and lower overall treatment cost.

Conclusion. The decision model indicated that use of posaconazole as prophylaxis in patients with prolonged neutropenia should result in lower overall treatment costs relative to the cost of fluconazole or itraconazole.

Index terms: Antifungals; Costs; Drug comparisons; Fluconazole; Itraconazole; Neutropenia; Pharmacoeconomics; Posaconazole

Am J Health-Syst Pharm. 2008; 65:2237-43

Con Posaconazol, 45% reducción en los costes totales por paciente frente a Fluconazol/ Itraconazol:

3.051 $ vs 5.529 $

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VALUE IN HEALTH

Cost-Effectiveness of Posaconazole versus Fluconazole or Itraconazole in the Prevention of Invasive Fungal Infections among Neutropenic Patients in the United States

Amy K. O'Sullivan, PhD,[1] Ankur Pandya, MS,[1] George Papadopoulos, BSc(Hons),[2] David Thompson, PhD,[1] Amelia Langston, MD,[3] John Perfect, MD,[4] Milton C. Weinstein, PhD[5]

Objectives: Clinical trial data indicate that posaconazole is superior to fluconazole (FLU) or itraconazole (ITRA) in preventing invasive fungal infections (IFIs) among neutropenic patients. Our objective was to assess the cost-effectiveness of posaconazole versus FLU or ITRA for prevention of IFIs among neutropenic patients.

Methods: We used modeling techniques to assess the cost-effectiveness of posaconazole versus FLU or ITRA in the prevention of IFIs among patients with acute myelogenous leukemia (AML) or myelodysplastic syndromes (MDS) and chemotherapy-induced neutropenia. The probabilities of experiencing an IFI, IFI-related death, and death from other causes over 100 days of follow-up were estimated from clinical trial data. Long-term mortality, drug costs, and IFI treatment costs were obtained from secondary sources.

Results: Posaconazole is associated with fewer IFIs per patient (0.05 vs. 0.11) relative to FLU or ITRA over 100 days of follow-up, and lower discounted costs ($3900 vs. $4500) and increased life-years (2.50 vs. 2.43 discounted) over a lifetime horizon. Results from a probabilistic sensitivity analysis indicate that there is a 73% probability that posaconazole is cost saving versus FLU or ITRA and a 96% probability that the incremental cost-effectiveness ratio for posaconazole is at or below $50,000 per life-year saved.

Conclusions: We conclude that posaconazole is very likely to be a cost-effective alternative to FLU or ITRA in the prevention of IFIs among neutropenic patients with AML and MDS, and may result in cost savings.

Keywords: cost-effectiveness, decision analysis, invasive fungal infection, prophylaxis.

Con Posaconazol, reducción en los costes totales por paciente frente a Fluconazol/ Itraconazol: 3.900 $ vs 4.500 $

Análisis probabilístico: 73% prob ahorro y 96% prob coste/AVG < 50.000 $

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Holanda

Manuscript type: Original Article; Date accepted: 07-Aug-2008

Economic evaluation of posaconazole versus standard azole prophylaxis in high risk neutropenic patients in the Netherlands

Wiro B. Stam[1], Amy K. O'Sullivan[2], Bart Rijnders[3], Elly Lugtenburg[4], Lambert F.R. Span[5], Jeroen J.W.M. Janssen[6], Jeroen P. Jansen[7]

Background: Acute leukemia (AML) and myelodysplastic syndrome (MDS) patients experience prolonged neutropenia after treatment with intensive chemotherapy, leading to a high risk of invasive fungal infections (IFI). The present study evaluates the cost-effectiveness of posaconazole versus standard azoles for the prevention of IFIs in neutropenic patients in the Netherlands.

Methods: A decision-tree model was developed using data from a randomized trial that compared posaconazole and standard azole (fluconazole or itraconazole) prophylaxis in neutropenic patients receiving remission-induction chemotherapy for AML/MDS (Cornely et al., 2007). Following initiation of prophylaxis, clinical events are modeled with chance nodes reflecting probabilities of IFIs, IFI related death, and death from other causes. Patients surviving the prophylaxis are assumed to have a life expectancy according to the underlying condition. This allows translation of the trial outcomes to a lifetime horizon. Data on life expectancy, quality of life, medical resource consumption and costs were obtained from the literature. Model outcomes include cost per life year gained and cost per QALY gained.

Results: The total cost (treatment of breakthrough IFI + prophylaxis) for posaconazole amounted to €4,412 (95% uncertainty interval €3,403 – €5,666), which is - €183 (-€1,985 - €1,564) less than costs with standard azoles. Posaconazole prophylaxis resulted in 0.08 (0.02 – 0.15) QALYs gained in comparison to prophylaxis with standard azoles. Results from a probabilistic sensitivity analysis indicate that there is a 90% probability that the cost per QALY gained with posaconazole is below €20.000. Additional scenario analyses with different assumptions confirmed these findings.

Conclusion: Given the underlying data and assumptions, the economic evaluation demonstrated that posaconazole prophylaxis is expected to be cost effective compared to fluconazole / itraconazole in neutropenic AML/MDS patients after intensive chemotherapy.

Con Posaconazol, reducción en los costes totales por paciente frente a Fluconazol/ Itraconazol:

-183 €

Análisis probabilístico:

90% de probabilidad de un coste por AVAC ganado < 20.000 €

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Bélgica

Cost-Effectiveness of Posaconazole (Noxafil®) Versus Standard AzoleTherapy in the Prevention of Invasive Fungal Infections Among High-Risk Neutropenic Patients in Belgium

Johan Maertens[1] Michel Aoun[2], Dominique Bron[2], Philippe Jorens[3], Willy E. Peetermans[1], Koen Theunissen[4], Alix Engalytcheff[5], Ilse Van Vlaenderen[6], O'Sullivan AK[7].

Suiza

Cost-Effectiveness of Posaconazole Versus Standard Azole Therapy for the Prevention of Invasive Fungal Infection (IFI) in High-Risk Patients in Switzerland

Roger-Axel Greiner,[1] Yvonne Meier,[2] Amy K. O'Sullivan,[3] Alexander Imhof[4]

Canadá

Posaconazole versus Standard Azole Therapy in the Prophylaxis against Invasive Fungal Infections among High-risk Neutropenic Patients in Canada: A Cost-effectiveness Analysis

A. A. Tahami Monfared,[1] A. K. O'Sullivan,[2] G. Papadopoulos[3]

EC: Posaconazol vs FLU

Posaconazole or Fluconazole for Prophylaxis in Severe Graft-versus-Host Disease

Ullman AJ

N ENGL J MED 356;4 WWW.NEJM.ORG JANUARY 25, 2007

Of a total of 600 patients, 301 were assigned to posaconazole and 299 to fluconazole. At the end of the fixed 112-day treatment period, posaconazole was found to be as effective as fluconazole in preventing all invasive fungal infections (incidence, 5.3% and 9.0%, respectively; odds ratio, 0.56; 95 percent confidence interval [CI], 0.30 to 1.07; P=0.07) and was superior to fluconazole in preventing proven or probable invasive aspergillosis (2.3% vs. 7.0%; odds ratio, 0.31; 95% CI, 0.13 to 0.75; P=0.006). While patients were receiving study medications (exposure period), in the posaconazole group, as compared with the fluconazole group, there were fewer breakthrough invasive fungal infections (2.4% vs. 7.6%, P=0.004), particularly invasive aspergillosis (1.0% vs. 5.9%, P=0.001). Overall mortality was similar in the two groups, but the number of deaths from invasive fungal infections was lower in the posaconazole group (1%, vs. 4% in the fluconazole group; P=0.046). The inci-

GvHD: reacción del injerto contra el huésped

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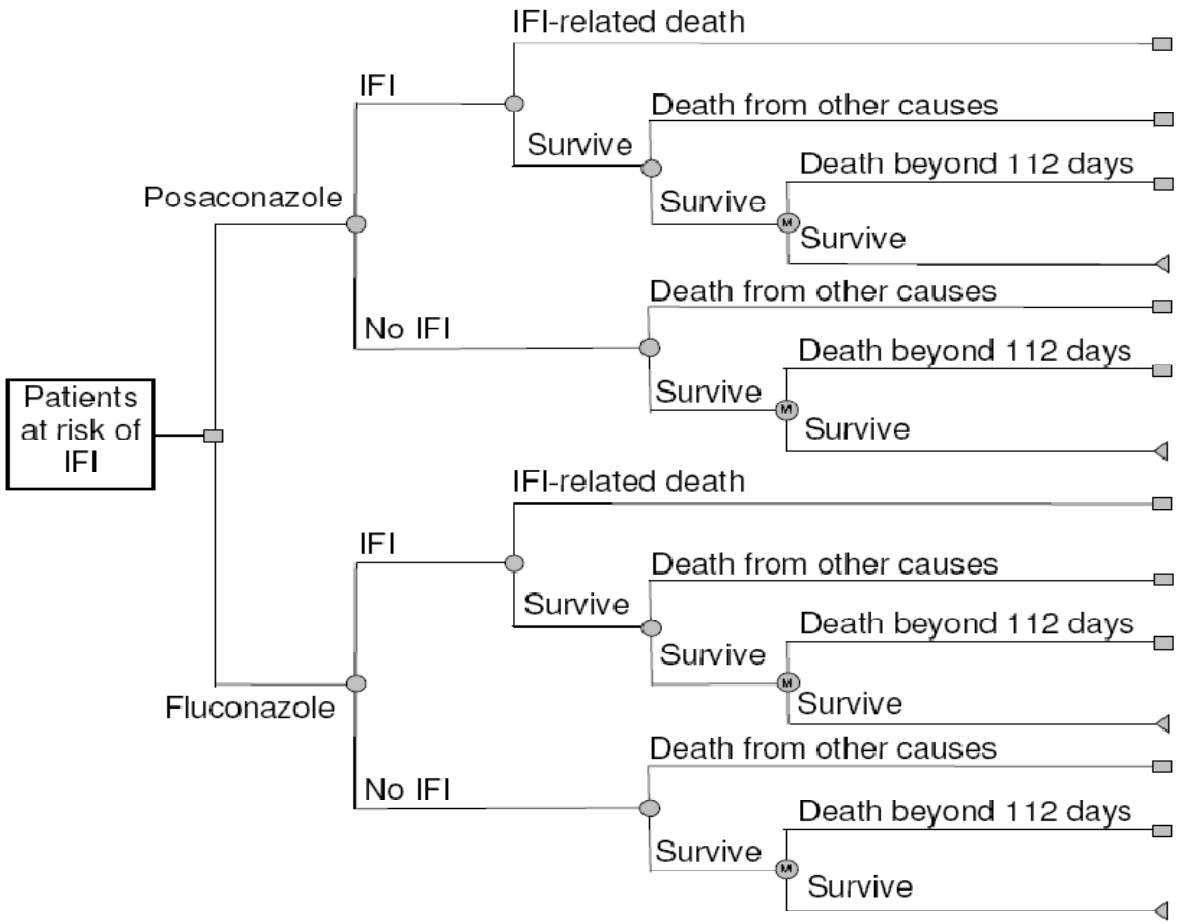
Posaconazol vs FLU

Figure 1: Decision-tree model of POS vs. FLU in the prevention of IFIs



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de la Cámara R,
et al

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Posaconazol vs FLU

OBJECTIVE

To assess the cost-effectiveness of posaconazole versus fluconazole in preventing invasive fungal infections in patients with graft-versus-host disease from the Spanish National Health System perspective.

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Table 1: Clinical model input parameters

Model Input parameters	Estimate	Reference
Efficacy of Prophylaxis		
Probability of experiencing an IFI		
Fluconazole	0.09	3
Posaconazole	0.05	3
Survival Following Prophylaxis Treatment		
Probability of experiencing an IFI-related death within 112 days of initiation of prophylaxis drug therapy		
Posaconazole	0.250	3
Fluconazole	0.444	3
Probability of death from other causes within 112 days		
Posaconazole	0.239	3
Fluconazole	0.241	3
Excess mortality for GVHD patients (each year)		
With or without IFI	6.0%	4

3.- Ullman AJ, Lipton JH, Vesole DH, et al. Posaconazole or Fluconazole for prophylaxis in severe graft-versus-host disease New Engl J Med 356;4:335-47

4.- Wingard JR, Kubilis P, Lee L, et al. Clinical significance of nephrotoxicity in patients treated with amphotericin B for suspected or proven aspergilosis. Clin Infect Dis 1999; 29: 1402-7.

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Posaconazol vs FLU

Table 3: Cost-effectiveness of POS vs FLU in the prevention of IFI among GVHD patients

Strategy	Total costs	IFI events	Life years	ICER (cost per IFI avoided)	ICER (cost per LYG)
POS	€11,585	0.05	8.01	€125,371	€20,246
FLU	€6,959	0.09	7.78	-	-

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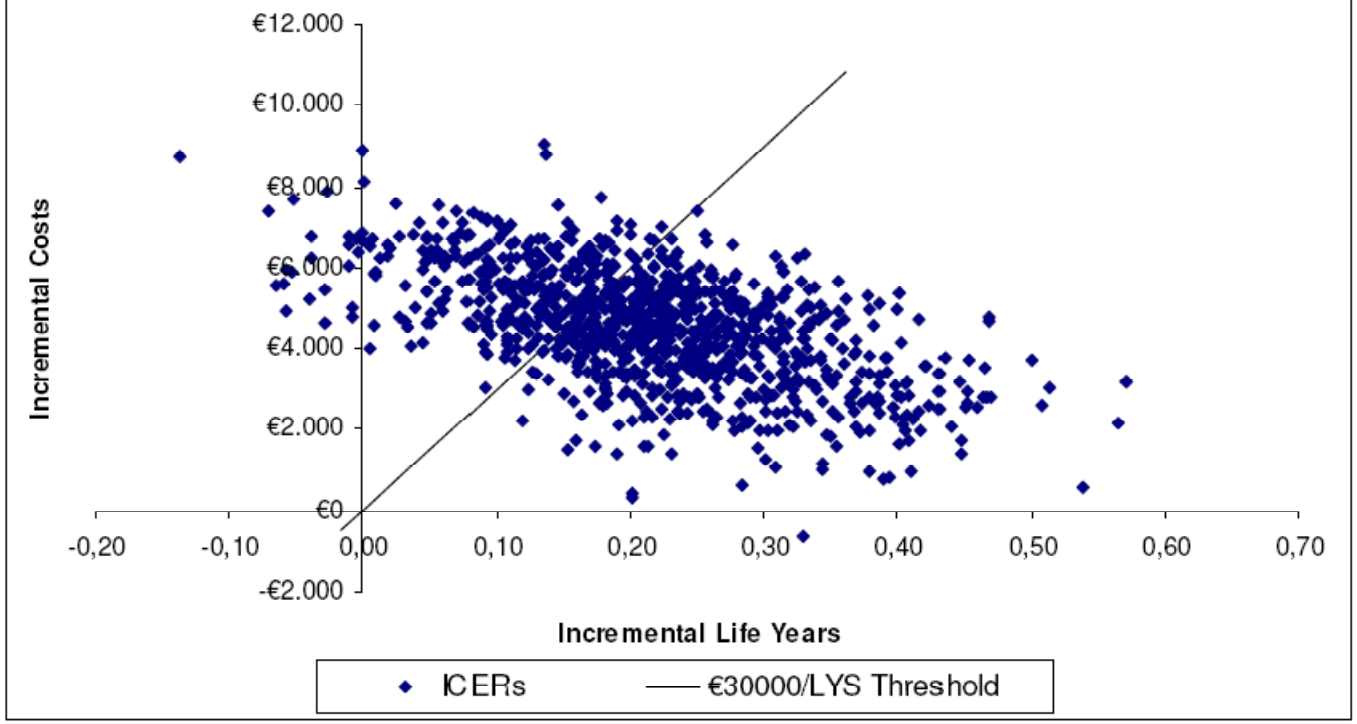
Posaconazol vs FLU

Probabilistic sensitivity analysis suggests that there is a 70% probability that POS is cost-effective at a €30.000 per life year saved threshold, threshold commonly used in Spain for assessing the cost-effectiveness of new technologies (Figure 2).

Figure 2: Scatter plot of 1,000 incremental cost and incremental life-years pairs for POS vs FLU



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Holanda

Economic evaluation of posaconazole versus fluconazole prophylaxis in patients with GVHD in the Netherlands

Table 2: Base case: outcomes and costs per patient

	Posaconazole Mean (95% UI)	Fluconazole Mean (95% UI)	difference Mean (95% UI)*
Probability of IFI	0.05	0.09	-0.04
	(0.03;0.08)	(0.06;0.12)	(-0.08;0.00)
Life expectancy (yrs)	11.66	11.47	0.19
	(11.10;12.19)	(10.88;12.02)	(0.02;0.39)
QALYs	10.52	10.35	0.17
	(8.83;11.74)	(8.67;11.60)	(0.02;0.36)
Total treatment cost	€ 9,428	€ 4,861	€ 4,566
	(7,743;11,388)	(3,597;6,243)	(2,460;6,854)
% Prophylactic drug costs	79% (€ 7,457)	31% (€ 1,513)	
% IFI treatment costs	21% (€ 1,971)	69% (€ 3,348)	

Prob de IFI (9% o 15%):

Coste por AVAC ganado: 26.225 o 13.462 €

Análisis probabilístico:

79% o 94% de probabilidad de un coste por AVAC ganado < 50.000 €

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Cost-Effectiveness of Posaconazole Versus Fluconazole in the Prevention of Invasive Fungal Infection in Patients With Graft-Versus-Host Disease (GVHD) in the United States

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Table 2. Cost-Effectiveness of Posaconazole Versus Fluconazole in the Prevention of IFIs Among GVHD Patients in the United States

Prophylaxis Strategy	Total Costs, $	Incremental Costs, $	IFI Events	IFIs Avoided	Life-Years	LYS	ICER, $ (costs per IFI avoided)	ICER, $ (cost per LYS)
Fluconazole	5,530	—	0.05	—	7.66	—	—	—
Posaconazole	8,750	3,320	0.09	–0.04	7.87	0.21	87,300	15,700

LYS, life-years saved; ICER, incremental cost-effectiveness ratio.

Coste por AVG:

15.700 $

Análisis probabilístico:

88% de probabilidad de un coste por AVG < 50.000 €

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Eficiencia de la profilaxis de las IFI en pacientes oncohematológicos

- Pacientes con NEUTROPENIA
  - FLUCONAZOL mejor que no profilaxis
  - POSACONAZOL mejor que FLUCONAZOL/ITRACONAZOL

Eficiencia de la profilaxis de las IFI en pacientes oncohematológicos

- Pacientes RECEPTORES DE TPH (GvHD)
  - MICAFUNGINA mejor que FLUCONAZOL
  - POSACONAZOL mejor que FLUCONAZOL

TPH: trasplante de progenitor hematopoyético

GvHD: reacción del injerto contra el huésped

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CONCLUSIONES

La profilaxis en los pacientes de alto riesgo de IFI es coste-efectiva

El uso de POSACONAZOL en profilaxis es coste-efectivo