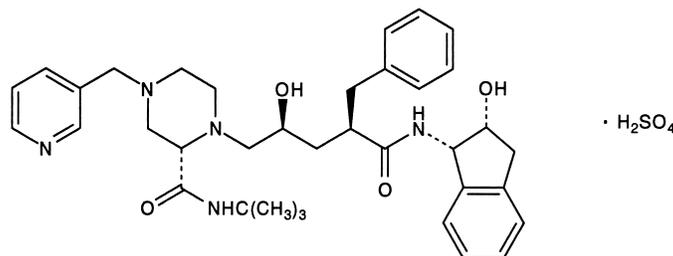


## CRIXIVAN® (INDINAVIR SULFATE) CAPSULES

### DESCRIPTION

CRIXIVAN® (indinavir sulfate) is an inhibitor of the human immunodeficiency virus (HIV) protease. CRIXIVAN Capsules are formulated as a sulfate salt and are available for oral administration in strengths of 100, 200, 333, and 400 mg of indinavir (corresponding to 125, 250, 416.3, and 500 mg indinavir sulfate, respectively). Each capsule also contains the inactive ingredients anhydrous lactose and magnesium stearate. The capsule shell has the following inactive ingredients and dyes: gelatin, titanium dioxide, silicon dioxide and sodium lauryl sulfate.

The chemical name for indinavir sulfate is [1(1S,2R),5(S)]-2,3,5-trideoxy-N-(2,3-dihydro-2-hydroxy-1H-inden-1-yl)-5-[2-[[[(1,1-dimethylethyl)amino]carbonyl]-4-(3-pyridinylmethyl)-1-piperazinyl]-2-(phenylmethyl)-D-erythro-pentonamide sulfate (1:1) salt. Indinavir sulfate has the following structural formula:



Indinavir sulfate is a white to off-white, hygroscopic, crystalline powder with the molecular formula  $C_{36}H_{47}N_5O_4 \cdot H_2SO_4$  and a molecular weight of 711.88. It is very soluble in water and in methanol.

### MICROBIOLOGY

**Mechanism of Action:** HIV-1 protease is an enzyme required for the proteolytic cleavage of the viral polyprotein precursors into the individual functional proteins found in infectious HIV-1. Indinavir binds to the protease active site and inhibits the activity of the enzyme. This inhibition prevents cleavage of the viral polyproteins resulting in the formation of immature non-infectious viral particles.

**Antiretroviral Activity In Vitro:** The *in vitro* activity of indinavir was assessed in cell lines of lymphoblastic and monocytic origin and in peripheral blood lymphocytes. HIV-1 variants used to infect the different cell types include laboratory-adapted variants, primary clinical isolates and clinical isolates resistant to nucleoside analogue and nonnucleoside inhibitors of the HIV-1 reverse transcriptase. The IC<sub>95</sub> (95% inhibitory concentration) of indinavir in these test systems was in the range of 25 to 100 nM. In drug combination studies with the nucleoside analogues zidovudine and didanosine, indinavir showed synergistic activity in cell culture. The relationship between *in vitro* susceptibility of HIV-1 to indinavir and inhibition of HIV-1 replication in humans has not been established.

**Drug Resistance:** Isolates of HIV-1 with reduced susceptibility to the drug have been recovered from some patients treated with indinavir. Viral resistance was correlated with the accumulation of mutations that resulted in the expression of amino acid substitutions in the viral protease. Eleven amino acid residue positions, (L10I/V/R, K20I/M/R, L24I, M46I/L, I54A/V, L63P, I64V, A71T/V, V82A/F/T, I84V, and L90M), at which substitutions are associated with resistance,

have been identified. Resistance was mediated by the co-expression of multiple and variable substitutions at these positions. No single substitution was either necessary or sufficient for measurable resistance ( $\geq 4$ -fold increase in  $IC_{95}$ ). In general, higher levels of resistance were associated with the co-expression of greater numbers of substitutions, although their individual effects varied and were not additive. At least 3 amino acid substitutions must be present for phenotypic resistance to indinavir to reach measurable levels. In addition, mutations in the p7/ p1 and p1/ p6 gag cleavage sites were observed in some indinavir resistant HIV-1 isolates.

*In vitro* phenotypic susceptibilities to indinavir were determined for 38 viral isolates from 13 patients who experienced virologic rebounds during indinavir monotherapy. Pre-treatment isolates from five patients exhibited indinavir  $IC_{95}$  values of 50-100 nM. At or following viral RNA rebound (after 12-76 weeks of therapy),  $IC_{95}$  values ranged from 25 to  $>3000$  nM, and the viruses carried 2 to 10 mutations in the protease gene relative to baseline.

**Cross-Resistance to Other Antiviral Agents:** Varying degrees of HIV-1 cross-resistance have been observed between indinavir and other HIV-1 protease inhibitors. In studies with ritonavir, saquinavir, and amprenavir, the extent and spectrum of cross-resistance varied with the specific mutational patterns observed. In general, the degree of cross-resistance increased with the accumulation of resistance-associated amino acid substitutions. Within a panel of 29 viral isolates from indinavir-treated patients that exhibited measurable ( $\geq 4$ -fold) phenotypic resistance to indinavir, all were resistant to ritonavir. Of the indinavir resistant HIV-1 isolates, 63% showed resistance to saquinavir and 81% to amprenavir.

## CLINICAL PHARMACOLOGY

### *Pharmacokinetics*

**Absorption:** Indinavir was rapidly absorbed in the fasted state with a time to peak plasma concentration ( $T_{max}$ ) of  $0.8 \pm 0.3$  hours (mean  $\pm$  S.D.) ( $n=11$ ). A greater than dose-proportional increase in indinavir plasma concentrations was observed over the 200-1000 mg dose range. At a dosing regimen of 800 mg every 8 hours, steady-state area under the plasma concentration time curve (AUC) was  $30,691 \pm 11,407$  nM $\cdot$ hour ( $n=16$ ), peak plasma concentration ( $C_{max}$ ) was  $12,617 \pm 4037$  nM ( $n=16$ ), and plasma concentration eight hours post dose (trough) was  $251 \pm 178$  nM ( $n=16$ ).

**Effect of Food on Oral Absorption:** Administration of indinavir with a meal high in calories, fat, and protein (784 kcal, 48.6 g fat, 31.3 g protein) resulted in a  $77\% \pm 8\%$  reduction in AUC and an  $84\% \pm 7\%$  reduction in  $C_{max}$  ( $n=10$ ). Administration with lighter meals (e.g., a meal of dry toast with jelly, apple juice, and coffee with skim milk and sugar or a meal of corn flakes, skim milk and sugar) resulted in little or no change in AUC,  $C_{max}$  or trough concentration.

**Distribution:** Indinavir was approximately 60% bound to human plasma proteins over a concentration range of 81 nM to 16,300 nM.

**Metabolism:** Following a 400-mg dose of  $^{14}C$ -indinavir,  $83 \pm 1\%$  ( $n=4$ ) and  $19 \pm 3\%$  ( $n=6$ ) of the total radioactivity was recovered in feces and urine, respectively; radioactivity due to parent drug in feces and urine was 19.1% and 9.4%, respectively. Seven metabolites have been identified, one glucuronide conjugate and six oxidative metabolites. *In vitro* studies indicate that cytochrome P-450 3A4 (CYP3A4) is the major enzyme responsible for formation of the oxidative metabolites.

**Elimination:** Less than 20% of indinavir is excreted unchanged in the urine. Mean urinary excretion of unchanged drug was  $10.4 \pm 4.9\%$  ( $n=10$ ) and  $12.0 \pm 4.9\%$  ( $n=10$ ) following a single 700-mg and 1000-mg dose, respectively. Indinavir was rapidly eliminated with a half-life of  $1.8 \pm 0.4$  hours ( $n=10$ ). Significant accumulation was not observed after multiple dosing at 800 mg every 8 hours.

### *Special Populations*

**Hepatic Insufficiency:** Patients with mild to moderate hepatic insufficiency and clinical evidence of cirrhosis had evidence of decreased metabolism of indinavir resulting in approximately 60% higher mean AUC following a single 400-mg dose ( $n=12$ ). The half-life of indinavir increased to  $2.8 \pm 0.5$  hours. Indinavir pharmacokinetics have not been studied in

patients with severe hepatic insufficiency (see DOSAGE AND ADMINISTRATION, *Hepatic Insufficiency*).

**Renal Insufficiency:** The pharmacokinetics of indinavir have not been studied in patients with renal insufficiency.

**Gender:** The effect of gender on the pharmacokinetics of indinavir was evaluated in 10 HIV seropositive women who received CRIXIVAN 800 mg every 8 hours with zidovudine 200 mg every 8 hours and lamivudine 150 mg twice a day for one week. Indinavir pharmacokinetic parameters in these women were compared to those in HIV seropositive men (pooled historical control data). Differences in indinavir exposure, peak concentrations, and trough concentrations between males and females are shown in Table 1 below:

PK Parameter	% change in PK parameter for females relative to males	90% Confidence Interval
AUC <sub>0-8h</sub> (nM•hr)	↓13%	(↓32%, ↑12%)
C <sub>max</sub> (nM)	↓13%	(↓32%, ↑10%)
C <sub>8h</sub> (nM)	↓22%	(↓47%, ↑15%)

↓Indicates a decrease in the PK parameter; ↑indicates an increase in the PK parameter.

The clinical significance of these gender differences in the pharmacokinetics of indinavir is not known.

**Race:** Pharmacokinetics of indinavir appear to be comparable in Caucasians and Blacks based on pharmacokinetic studies including 42 Caucasians (26 HIV-positive) and 16 Blacks (4 HIV-positive).

**Pediatric:** The optimal dosing regimen for use of indinavir in pediatric patients has not been established. In HIV-infected pediatric patients (age 4-15 years), a dosage regimen of indinavir capsules, 500 mg/m<sup>2</sup> every 8 hours, produced AUC<sub>0-8hr</sub> of 38,742 ± 24,098 nM•hour (n=34), C<sub>max</sub> of 17,181 ± 9809 nM (n=34), and trough concentrations of 134 ± 91 nM (n=28). The pharmacokinetic profiles of indinavir in pediatric patients were not comparable to profiles previously observed in HIV-infected adults receiving the recommended dose of 800 mg every 8 hours. The AUC and C<sub>max</sub> values were slightly higher and the trough concentrations were considerably lower in pediatric patients. Approximately 50% of the pediatric patients had trough values below 100 nM; whereas, approximately 10% of adult patients had trough levels below 100 nM. The relationship between specific trough values and inhibition of HIV replication has not been established.

**Drug Interactions** (also see PRECAUTIONS, *Drug Interactions*)

Specific drug interaction studies were performed with indinavir and a number of drugs.

**Drugs That Should Not Be Coadministered With CRIXIVAN**

Administration of indinavir (800 mg every 8 hours) with rifampin (600 mg once daily) for one week resulted in an 89% ± 9% decrease in indinavir AUC.

In a published study, eight HIV-negative volunteers received indinavir 800 mg every eight hours for four doses prior to and at the end of a 14-day course of St. John's wort (*Hypericum perforatum*, standardized to 0.3% hypericin) 300 mg three times daily. Indinavir plasma pharmacokinetics were determined following the fourth dose of indinavir prior to and following St. John's wort. Following the course of St. John's wort, the AUC<sub>0-8h</sub> of indinavir was decreased 57% ± 19% and the C<sub>8h</sub> of indinavir was decreased 81% ± 16% compared to when indinavir was taken alone. All subjects demonstrated a decrease in AUC<sub>0-8h</sub> (range 36 to 79%) and a decrease in C<sub>8h</sub> (range 49 to 99%). (See WARNINGS.)

**Drugs Requiring Dose Modification**

**Delavirdine:** Preliminary data (n=14) indicate that delavirdine inhibits the metabolism of indinavir such that coadministration of a 400-mg single dose of indinavir with delavirdine (400 mg three times a day) resulted in indinavir AUC values slightly less than those observed following

administration of an 800-mg dose of indinavir alone. Also, coadministration of a 600-mg dose of indinavir with delavirdine (400 mg three times a day) resulted in indinavir AUC values approximately 40% greater than those observed following administration of an 800-mg dose of indinavir alone. Indinavir had no effect on delavirdine pharmacokinetics (see DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Delavirdine*).

*Efavirenz:* When indinavir (800 mg every 8 hours) was given with efavirenz (200 mg once daily) for two weeks, the indinavir AUC and  $C_{max}$  were decreased by approximately 31% and 16%, respectively, as a result of enzyme induction. (See DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Efavirenz*.)

*Sildenafil:* The results of one published study in HIV-infected men (n=6) indicated that coadministration of indinavir (800 mg every 8 hours chronically) with a single 25-mg dose of sildenafil resulted in an 11% increase in average  $AUC_{0-8hr}$  of indinavir and a 48% increase in average indinavir peak concentration ( $C_{max}$ ) compared to 800 mg every 8 hours alone. Average sildenafil AUC was increased by 340% following coadministration of sildenafil and indinavir compared to historical data following administration of sildenafil alone (see PRECAUTIONS, *Drug Interactions*).

*Itraconazole:* In a multiple-dose study, administration in the fasted state of itraconazole capsules 200 mg twice daily with indinavir 600 mg every 8 hours resulted in an indinavir AUC similar to that observed during administration of indinavir 800 mg every 8 hours alone for one week (see DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Itraconazole*).

*Ketoconazole:* In a single-dose study, administration of a 400-mg dose of ketoconazole with a 400-mg dose of indinavir resulted in a  $68\% \pm 48\%$  increase in indinavir AUC compared to a 400-mg dose of indinavir alone. In a multiple-dose study, administration of ketoconazole 400 mg once daily with indinavir 600 mg every 8 hours resulted in an  $18\% \pm 17\%$  decrease in indinavir AUC compared to an 800-mg dose of indinavir alone every 8 hours (see DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Ketoconazole*).

*Rifabutin:* The coadministration of indinavir 800 mg every 8 hours with rifabutin either 300 mg once daily or 150 mg once daily was evaluated in two separate clinical studies. The results of these studies showed a decrease in indinavir AUC ( $32\% \pm 19\%$  and  $31\% \pm 15\%$ , respectively) vs. indinavir 800 mg every 8 hours alone and an increase in rifabutin AUC ( $204\% \pm 142\%$  and  $60\% \pm 47\%$ , respectively) vs. rifabutin 300 mg once daily alone. (See DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Rifabutin*.)

#### *Drugs Not Requiring Dose Modification*

*Cimetidine, Quinidine, Grapefruit Juice:* Administration of a single 400-mg dose of indinavir following six days of cimetidine (600 mg every 12 hours) did not affect indinavir AUC. Administration of a single 400-mg dose of indinavir with 8 oz. of grapefruit juice resulted in a decrease in indinavir AUC ( $26\% \pm 18\%$ ). Administration of a single 400-mg dose of indinavir with 200 mg of quinidine sulfate resulted in a  $10\% \pm 26\%$  increase in indinavir AUC.

*Methadone:* Administration of indinavir (800 mg every 8 hours) with methadone (20 mg to 60 mg daily) for one week resulted in no change in methadone AUC and little or no change in indinavir AUC.

*Nucleoside analogue antiretroviral agents:* Administration of indinavir (1000 mg every 8 hours) with zidovudine (200 mg every 8 hours) for one week resulted in a  $13\% \pm 48\%$  increase in indinavir AUC and a  $17\% \pm 23\%$  increase in zidovudine AUC. In another study, administration of indinavir (800 mg every 8 hours) with zidovudine (200 mg every 8 hours) in combination with lamivudine (150 mg twice daily) for one week resulted in no change in indinavir AUC, a 36% increase in zidovudine AUC, and a 6% decrease in lamivudine AUC. Administration of indinavir (800 mg every 8 hours) in combination with stavudine (40 mg every 12 hours) for one week resulted in no change in indinavir AUC and a  $25\% \pm 26\%$  increase in stavudine AUC.

*ORTHO-NOVUM 1/35:*\*\* Administration of indinavir (800 mg every 8 hours) with ORTHO-NOVUM 1/35 for one week resulted in a  $24\% \pm 17\%$  increase in ethinyl estradiol AUC and a  $26\% \pm 14\%$  increase in norethindrone AUC.

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\*\* Registered trademark of Ortho Pharmaceutical Corporation

*Trimethoprim/Sulfamethoxazole, Fluconazole, Isoniazid, Clarithromycin:* Administration of indinavir (400 mg every 6 hours) with trimethoprim/sulfamethoxazole (one double strength tablet every 12 hours) for one week resulted in no change in indinavir AUC, a 19% ± 31% increase in trimethoprim AUC, and no change in sulfamethoxazole AUC. Administration of indinavir (1000 mg every 8 hours) with fluconazole (400 mg once daily) for one week resulted in a 19% ± 33% decrease in indinavir AUC and no change in fluconazole AUC. Administration of indinavir (800 mg every 8 hours) with isoniazid (300 mg once daily) for one week resulted in no change in indinavir AUC and a 13% ± 15% increase in isoniazid AUC. Administration of indinavir (800 mg every 8 hours) with clarithromycin (500 mg every 12 hours) for one week resulted in a 29% ± 42% increase in indinavir AUC and a 53% ± 36% increase in clarithromycin AUC.

## INDICATIONS AND USAGE

CRIXIVAN in combination with antiretroviral agents is indicated for the treatment of HIV infection.

This indication is based on two clinical trials of approximately 1 year duration that demonstrated: 1) a reduction in the risk of AIDS-defining illnesses or death; 2) a prolonged suppression of HIV RNA.

### *Description of Studies*

In all clinical studies, with the exception of ACTG 320, the AMPLICOR HIV MONITOR assay was used to determine the level of circulating HIV RNA in serum. This is an experimental use of the assay. HIV RNA results should not be directly compared to results from other trials using different HIV RNA assays or using other sample sources.

Study ACTG 320 was a multicenter, randomized, double-blind clinical endpoint trial to compare the effect of CRIXIVAN in combination with zidovudine and lamivudine with that of zidovudine plus lamivudine on the progression to an AIDS-defining illness (ADI) or death. Patients were protease inhibitor and lamivudine naive and zidovudine experienced, with CD4 cell counts of  $\leq 200$  cells/mm<sup>3</sup>. The study enrolled 1156 HIV-infected patients (17% female, 28% Black, 18% Hispanic, mean age 39 years). The mean baseline CD4 cell count was 87 cells/mm<sup>3</sup>. The mean baseline HIV RNA was 4.95 log<sub>10</sub> copies/mL (89,035 copies/mL). The study was terminated after a planned interim analysis, resulting in a median follow-up of 38 weeks and a maximum follow-up of 52 weeks. Results are shown in Table 2 and Figures 1 & 2.

**Table 2**  
ACTG 320

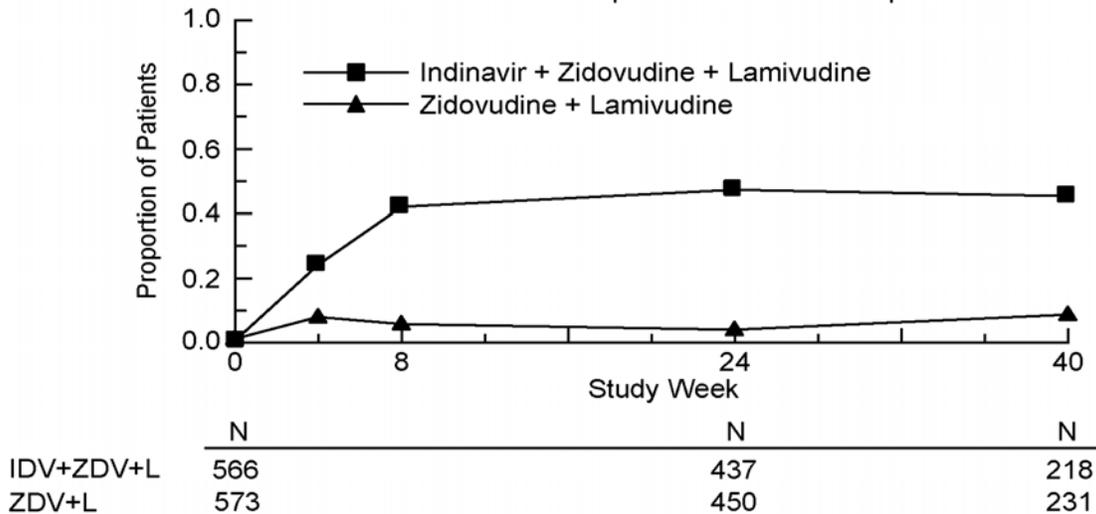
Endpoint	Number (%) of Patients with AIDS-defining Illness or Death	
	IDV+ZDV+L (n=577)	ZDV+L (n=579)
HIV Progression or Death	35 (6.1)	63 (10.9)
Death*	10 (1.7)	19 (3.3)

\* The number of deaths is inadequate to assess the impact of Indinavir on survival.

IDV = Indinavir, ZDV = Zidovudine, L = Lamivudine

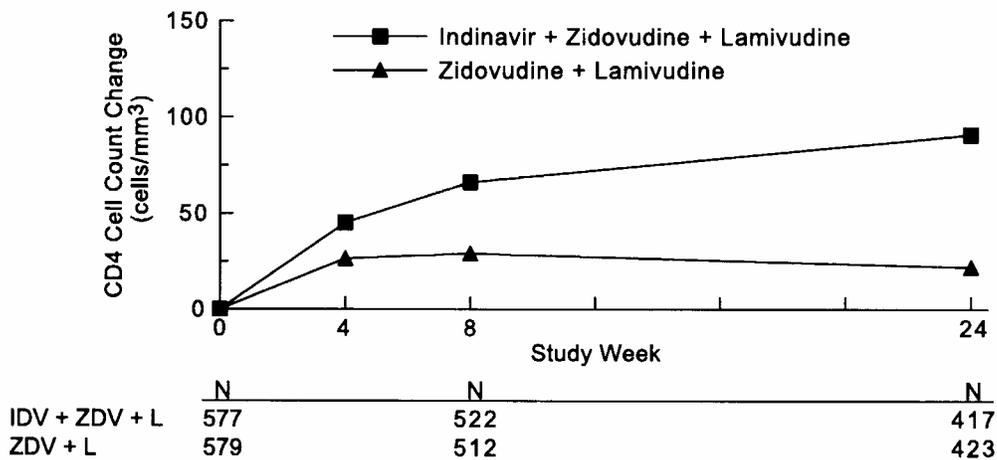
### Study ACTG 320: Figure 1

Indinavir Protocol ACTG 320 Zidovudine Experienced  
 Plasma Viral RNA - Proportions Below 400 copies/mL



### Study ACTG 320: Figure 2

ACTG 320 Zidovudine Experienced  
 CD4 Cell Counts - Mean Change from Baseline



Study 028, a double-blind, multicenter, randomized, clinical endpoint trial conducted in Brazil, compared the effects of CRIXIVAN plus zidovudine with those of CRIXIVAN alone or zidovudine alone on the progression to an ADI or death, and on surrogate marker responses. All patients were antiretroviral naive with CD4 cell counts of 50 to 250 cells/mm<sup>3</sup>. The study enrolled 996 HIV-1 seropositive patients [28% female, 11% Black, 1% Asian/Other, median age 33 years, mean baseline CD4 cell count of 152 cells/mm<sup>3</sup>, mean serum viral RNA of 4.44 log<sub>10</sub> copies/mL (27,824 copies/mL)]. Treatment regimens containing zidovudine were modified in a blinded manner with the optional addition of lamivudine (median time: week 40). The median length of follow-up was 56 weeks with a maximum of 97 weeks. The study was terminated after a planned interim analysis, resulting in a median follow-up of 56 weeks and a maximum follow-up of 97 weeks. Results are shown in Table 3 and Figures 3 and 4.

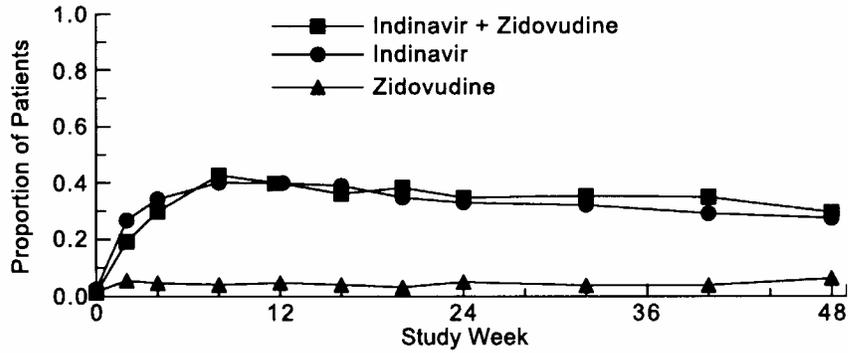
Table 3  
 Protocol 028

Endpoint	Number (%) of Patients with AIDS-defining Illness or Death		
	IDV+ZDV (n=332)	IDV (n=332)	ZDV (n=332)
HIV Progression or Death	21 (6.3)	27 (8.1)	62 (18.7)
Death*	8 (2.4)	5 (1.5)	11 (3.3)

\*The number of deaths is inadequate to assess the impact of Indinavir on survival.

**Study 028: Figure 3**

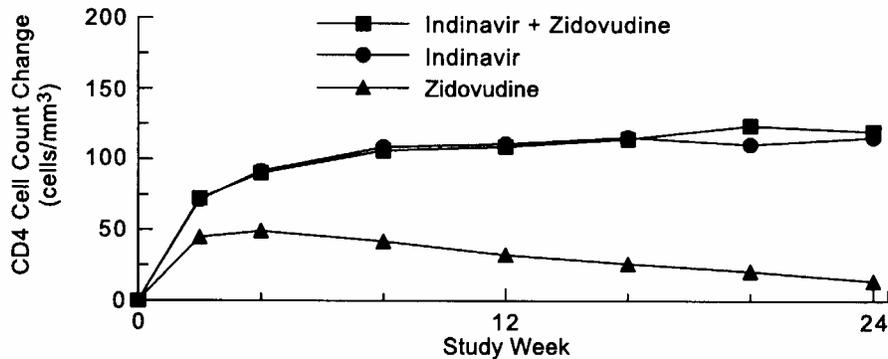
Indinavir Protocol 028 Zidovudine Naive  
 Viral RNA - Proportions Below 500 Copies/mL in Serum



	N	N	N
IDV + ZDV	328	319	261
IDV	329	318	244
ZDV	328	317	253

### Study 028: Figure 4

Indinavir Protocol 028 Zidovudine Naive  
 CD4 Cell Counts - Mean Change from Baseline

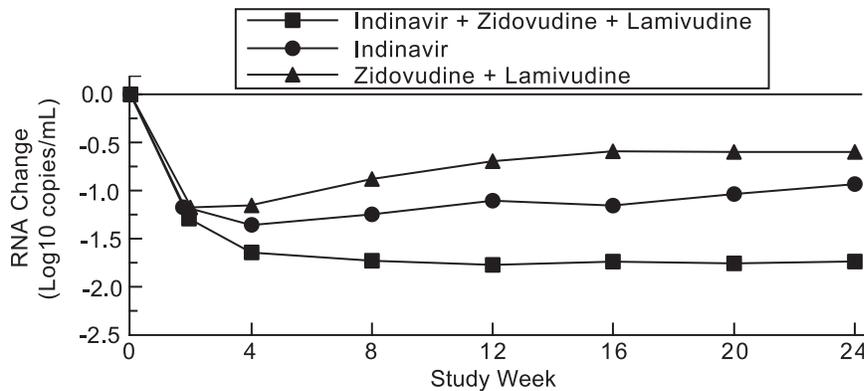


	N	N
IDV + ZDV	332	277
IDV	332	298
ZDV	332	295

Study 035 was a multicenter randomized trial in 97 HIV-1 seropositive patients who were zidovudine-experienced (median exposure 30 months), protease-inhibitor- and lamivudine-naive, with mean baseline CD4 count 175 cells/mm<sup>3</sup> and mean baseline serum viral RNA 4.62 log<sub>10</sub> copies/mL (41,230 copies/mL). Comparisons included CRIXIVAN plus zidovudine plus lamivudine vs. CRIXIVAN alone vs. zidovudine plus lamivudine. After at least 24 weeks of randomized, double-blind therapy, patients were switched to open-label CRIXIVAN plus lamivudine plus zidovudine. Mean changes in log<sub>10</sub> viral RNA in serum, the proportions of patients with viral RNA below 500 copies/mL in serum, and mean changes in CD4 cell counts, during 24 weeks of randomized, double-blinded therapy are summarized in Figures 5, 6, and 7, respectively. A limited number of patients remained on randomized, double-blind treatment for longer periods; based on this extended treatment experience, it appears that a greater number of subjects randomized to CRIXIVAN plus zidovudine plus lamivudine demonstrated HIV RNA levels below 500 copies/mL during one year of therapy as compared to those in other treatment groups.

### Study 035: Figure 5

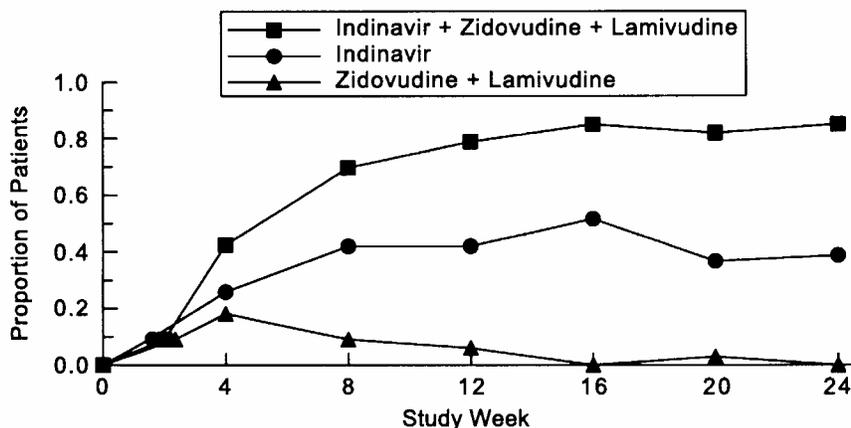
Indinavir Protocol 035 Zidovudine Experienced  
 Viral RNA - Mean Log10 Change from Baseline in Serum



	N	N	N
IDV + ZDV + L	32	30	30
IDV	31	31	28
ZDV + L	33	33	30

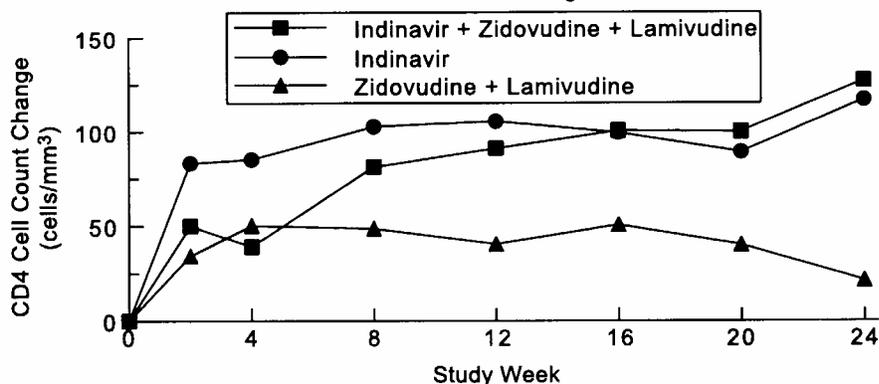
**Study 035: Figure 6**

Indinavir Protocol 035 Zidovudine Experienced  
 Viral RNA - Proportions Below 500 Copies/mL in Serum



**Study 035: Figure 7**

Indinavir Protocol 035 Zidovudine Experienced  
 CD4 Cell Counts - Mean Change from Baseline



	N	N	N
IDV + ZDV + L	33	31	31
IDV	31	31	27
ZDV + L	33	33	29

*Genotypic Resistance in Clinical Studies*

Study 006 (10/15/93-10/12/94) was a dose-ranging study in which patients were initially treated with CRIXIVAN at a dose of <2.4 g/day followed by 2.4 g/day. Study 019 (6/23/94-4/10/95) was a randomized comparison of CRIXIVAN 600 mg every 6 hours, CRIXIVAN plus zidovudine, and zidovudine alone. Table 4 shows the incidence of genotypic resistance at 24 weeks in these studies.

Table 4  
Genotypic Resistance at 24 Weeks

Treatment Group	Resistance to IDV n/N	Resistance to ZDV n/N
IDV	—	—
<2.4 g/day	31/37 (84%)	—
2.4 g/day	9/21 (43%)	1/17 (6%)
IDV/ZDV	4/22 (18%)	1/22 (5%)
ZDV	1/18 (6%)	11/17 (65%)

\* N - includes patients with non-amplifiable virus at 24 weeks who had amplifiable virus at week 0.

## CONTRAINDICATIONS

CRIXIVAN is contraindicated in patients with clinically significant hypersensitivity to any of its components.

CRIXIVAN should not be administered concurrently with terfenadine, cisapride, astemizole, triazolam, midazolam, pimozone, or ergot derivatives. Inhibition of CYP3A4 by CRIXIVAN could result in elevated plasma concentrations of these drugs, potentially causing serious or life-threatening reactions.

## WARNINGS

**ALERT: Find out about medicines that should not be taken with CRIXIVAN.** This statement is included on the product's bottle label.

### *Nephrolithiasis/Urolithiasis*

Nephrolithiasis/urolithiasis has occurred with CRIXIVAN therapy. The cumulative frequency of nephrolithiasis is substantially higher in pediatric patients (29%) than in adult patients (12.4%; range across individual trials: 4.7% to 34.4%). The cumulative frequency of nephrolithiasis events increases with increasing exposure to CRIXIVAN; however, the risk over time remains relatively constant. In some cases, nephrolithiasis/urolithiasis has been associated with renal insufficiency or acute renal failure, pyelonephritis with or without bacteremia. If signs or symptoms of nephrolithiasis/urolithiasis occur, (including flank pain, with or without hematuria or microscopic hematuria), temporary interruption (e.g., 1-3 days) or discontinuation of therapy may be considered.

**Adequate hydration is recommended in all patients treated with CRIXIVAN. (See ADVERSE REACTIONS and DOSAGE AND ADMINISTRATION, *Nephrolithiasis/Urolithiasis*.)**

### *Hemolytic Anemia*

Acute hemolytic anemia, including cases resulting in death, has been reported in patients treated with CRIXIVAN. Once a diagnosis is apparent, appropriate measures for the treatment of hemolytic anemia should be instituted, including discontinuation of CRIXIVAN.

### *Hepatitis*

Hepatitis including cases resulting in hepatic failure and death has been reported in patients treated with CRIXIVAN. Because the majority of these patients had confounding medical conditions and/or were receiving concomitant therapy(ies), a causal relationship between CRIXIVAN and these events has not been established.

### *Hyperglycemia*

New onset diabetes mellitus, exacerbation of pre-existing diabetes mellitus and hyperglycemia have been reported during post-marketing surveillance in HIV-infected patients

receiving protease inhibitor therapy. Some patients required either initiation or dose adjustments of insulin or oral hypoglycemic agents for treatment of these events. In some cases, diabetic ketoacidosis has occurred. In those patients who discontinued protease inhibitor therapy, hyperglycemia persisted in some cases. Because these events have been reported voluntarily during clinical practice, estimates of frequency cannot be made and a causal relationship between protease inhibitor therapy and these events has not been established.

#### *Drug Interactions*

Concomitant use of CRIXIVAN with lovastatin or simvastatin is not recommended. Caution should be exercised if HIV protease inhibitors, including CRIXIVAN, are used concurrently with other HMG-CoA reductase inhibitors that are also metabolized by the CYP3A4 pathway (e.g., atorvastatin or cerivastatin). The risk of myopathy including rhabdomyolysis may be increased when HIV protease inhibitors, including CRIXIVAN, are used in combination with these drugs.

Particular caution should be used when prescribing sildenafil in patients receiving indinavir. Coadministration of CRIXIVAN with sildenafil is expected to substantially increase sildenafil plasma concentrations and may result in an increase in sildenafil-associated adverse events, including hypotension, visual changes, and priapism (see PRECAUTIONS, *Drug Interactions* and *Information for Patients*, and the manufacturer's complete prescribing information for sildenafil).

Concomitant use of CRIXIVAN and St. John's wort (*Hypericum perforatum*) or products containing St. John's wort is not recommended. Coadministration of CRIXIVAN and St. John's wort has been shown to substantially decrease indinavir concentrations (see CLINICAL PHARMACOLOGY, *Pharmacokinetics, Drugs That Should Not Be Coadministered With CRIXIVAN*) and may lead to loss of virologic response and possible resistance to CRIXIVAN or to the class of protease inhibitors.

## **PRECAUTIONS**

### *General*

Indirect hyperbilirubinemia has occurred frequently during treatment with CRIXIVAN and has infrequently been associated with increases in serum transaminases (see also ADVERSE REACTIONS, *Clinical Trials* and *Post-Marketing Experience*). It is not known whether CRIXIVAN will exacerbate the physiologic hyperbilirubinemia seen in neonates. (See *Pregnancy*.)

### *Tubulointerstitial Nephritis*

Reports of tubulointerstitial nephritis with medullary calcification and cortical atrophy have been observed in patients with asymptomatic severe leukocyturia (>100 cells/high power field). Patients with asymptomatic severe leukocyturia should be followed closely and monitored frequently with urinalyses. Further diagnostic evaluation may be warranted, and discontinuation of CRIXIVAN should be considered in all patients with severe leukocyturia.

Immune reconstitution syndrome has been reported in patients treated with combination antiretroviral therapy (CART), including CRIXIVAN. During the initial phase of treatment, patients responding to antiretroviral therapy whose immune system responds to CART may develop an inflammatory response to indolent or residual opportunistic infections (such as MAI, CMV, PCP, or TB), which may necessitate further evaluation and treatment.

### *Coexisting Conditions*

**Patients with hemophilia:** There have been reports of spontaneous bleeding in patients with hemophilia A and B treated with protease inhibitors. In some patients, additional factor VIII was required. In many of the reported cases, treatment with protease inhibitors was continued or restarted. A causal relationship between protease inhibitor therapy and these episodes has not been established. (See ADVERSE REACTIONS, *Post-Marketing Experience*.)

**Patients with hepatic insufficiency due to cirrhosis:** In these patients, the dosage of CRIXIVAN should be lowered because of decreased metabolism of CRIXIVAN (see DOSAGE AND ADMINISTRATION).

**Patients with renal insufficiency:** Patients with renal insufficiency have not been studied.

### *Fat Redistribution*

Redistribution/accumulation of body fat including central obesity, dorsocervical fat enlargement (buffalo hump), peripheral wasting, facial wasting, breast enlargement, and

“cushingoid appearance” have been observed in patients receiving antiretroviral therapy. The mechanism and long-term consequences of these events are currently unknown. A causal relationship has not been established.

#### *Information for Patients*

A statement to patients and health care providers is included on the product’s bottle label. **ALERT: Find out about medicines that should NOT be taken with CRIXIVAN.** A Patient Package Insert (PPI) for CRIXIVAN is available for patient information.

CRIXIVAN is not a cure for HIV infection and patients may continue to develop opportunistic infections and other complications associated with HIV disease. The long-term effects of CRIXIVAN are unknown at this time. CRIXIVAN has not been shown to reduce the risk of transmission of HIV to others through sexual contact or blood contamination.

Patients should be advised to remain under the care of a physician when using CRIXIVAN and should not modify or discontinue treatment without first consulting the physician. Therefore, if a dose is missed, patients should take the next dose at the regularly scheduled time and should not double this dose. Therapy with CRIXIVAN should be initiated and maintained at the recommended dosage.

CRIXIVAN may interact with some drugs; therefore, patients should be advised to report to their doctor the use of any other prescription, non-prescription medication or herbal products, particularly St. John’s wort.

For optimal absorption, CRIXIVAN should be administered without food but with water 1 hour before or 2 hours after a meal. Alternatively, CRIXIVAN may be administered with other liquids such as skim milk, juice, coffee, or tea, or with a light meal, e.g., dry toast with jelly, juice, and coffee with skim milk and sugar; or corn flakes, skim milk and sugar (see CLINICAL PHARMACOLOGY, *Effect of Food on Oral Absorption* and DOSAGE AND ADMINISTRATION). Ingestion of CRIXIVAN with a meal high in calories, fat, and protein reduces the absorption of indinavir.

Patients receiving sildenafil should be advised that they may be at an increased risk of sildenafil-associated adverse events including hypotension, visual changes, and priapism, and should promptly report any symptoms to their doctors.

Patients should be informed that redistribution or accumulation of body fat may occur in patients receiving antiretroviral therapy and that the cause and long-term health effects of these conditions are not known at this time.

CRIXIVAN Capsules are sensitive to moisture. Patients should be informed that CRIXIVAN should be stored and used in the original container and the desiccant should remain in the bottle.

#### *Drug Interactions*

##### *Delavirdine*

Due to an increase in indinavir plasma concentrations (preliminary results), a dosage reduction of indinavir should be considered when CRIXIVAN and delavirdine are coadministered. (See DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Delavirdine*; CLINICAL PHARMACOLOGY, *Drug Interactions, Drugs Requiring Dose Modification, Delavirdine*.)

##### *Efavirenz*

Due to a decrease in the plasma concentrations of indinavir, a dosage increase of indinavir is recommended when CRIXIVAN and efavirenz are coadministered. No adjustment of the dose of efavirenz is necessary when given with indinavir. (See DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Efavirenz*; CLINICAL PHARMACOLOGY, *Drug Interactions, Drugs Requiring Dose Modification, Efavirenz*.)

##### *Atazanavir*

Both CRIXIVAN and atazanavir are associated with indirect (unconjugated) hyperbilirubinemia. Combinations of these drugs have not been studied and coadministration of CRIXIVAN and atazanavir is not recommended.

##### *Erectile Dysfunction Agents*

Particular caution should be used when prescribing sildenafil for patients receiving indinavir. The results of one published study in six HIV-infected subjects indicated that coadministration of indinavir (800 mg every 8 hours chronically) and sildenafil (25 mg as a single dose) resulted in increased indinavir and sildenafil concentrations. In two of the six subjects, prolonged clinical

effects of sildenafil were noted for 72 hours after a single dose of sildenafil in combination with indinavir. Based on the results of this study, the dose of sildenafil should not exceed 25 mg in a 48-hour period. Patients receiving sildenafil should be advised that they are at an increased risk of sildenafil-associated adverse events including hypotension, visual changes, and priapism, and should promptly report any symptoms to their health care providers (see CLINICAL PHARMACOLOGY, *Drug Interactions* and WARNINGS).

#### *Itraconazole*

Itraconazole is an inhibitor of P-450 3A4 that increases plasma concentrations of indinavir. Therefore, a dosage reduction of indinavir is recommended when CRIXIVAN and itraconazole are coadministered (see DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Itraconazole*; CLINICAL PHARMACOLOGY, *Drug Interactions, Drugs Requiring Dose Modification, Itraconazole*).

#### *Ketoconazole*

Ketoconazole is an inhibitor of P-450 3A4 that increases plasma concentrations of indinavir. Therefore, a dosage reduction of indinavir is recommended when CRIXIVAN and ketoconazole are coadministered (see DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Ketoconazole*; CLINICAL PHARMACOLOGY, *Drug Interactions, Drugs Requiring Dose Modification, Ketoconazole*).

#### *Rifabutin*

When rifabutin and CRIXIVAN are coadministered, there is an increase in the plasma concentrations of rifabutin and a decrease in the plasma concentrations of indinavir. A dosage reduction of rifabutin and a dosage increase of CRIXIVAN are necessary when rifabutin is coadministered with CRIXIVAN. The suggested dose adjustments are expected to result in rifabutin concentrations at least 50% higher than typically observed when rifabutin is administered alone at its usual dose (300 mg/day) and indinavir concentrations which may be slightly less than typically observed when indinavir is administered alone at its usual dose (800 mg every 8 hours). (See DOSAGE AND ADMINISTRATION, *Concomitant Therapy, Rifabutin*; CLINICAL PHARMACOLOGY, *Drug Interactions, Drugs Requiring Dose Modification, Rifabutin*.)

#### *Rifampin*

Rifampin is a potent inducer of P-450 3A4 that markedly diminishes plasma concentrations of indinavir. Therefore, CRIXIVAN and rifampin should not be coadministered (see CLINICAL PHARMACOLOGY, *Drugs That Should Not Be Coadministered With CRIXIVAN*).

#### *Calcium Channel Blockers*

Calcium channel blockers are metabolized by CYP3A4 which is inhibited by indinavir. Coadministration of CRIXIVAN with calcium channel blockers may result in increased plasma concentrations of the calcium channel blockers which could increase or prolong their therapeutic and adverse effects.

#### *Other*

If CRIXIVAN and didanosine are administered concomitantly, they should be administered at least one hour apart on an empty stomach; a normal (acidic) gastric pH may be necessary for optimum absorption of indinavir, whereas acid rapidly degrades didanosine which is formulated with buffering agents to increase pH (consult the manufacturer's product circular for didanosine).

Interactions between indinavir and less potent CYP3A4 inducers than rifampin, such as phenobarbital, phenytoin, carbamazepine, and dexamethasone have not been studied. These agents should be used with caution if administered concomitantly with indinavir because decreased indinavir plasma concentrations may result.

#### *Carcinogenesis, Mutagenesis, Impairment of Fertility*

Carcinogenicity studies were conducted in mice and rats. In mice, no increased incidence of any tumor type was observed. The highest dose tested in rats was 640 mg/kg/day; at this dose a statistically significant increased incidence of thyroid adenomas was seen only in male rats. At that dose, daily systemic exposure in rats was approximately 1.3 times higher than daily systemic exposure in humans. No evidence of mutagenicity or genotoxicity was observed in *in vitro* microbial mutagenesis (Ames) tests, *in vitro* alkaline elution assays for DNA breakage, *in vitro* and *in vivo* chromosomal aberration studies, and *in vitro* mammalian cell mutagenesis assays.

No treatment-related effects on mating, fertility, or embryo survival were seen in female rats and no treatment-related effects on mating performance were seen in male rats at doses providing systemic exposure comparable to or slightly higher than that with the clinical dose. In addition, no treatment-related effects were observed in fecundity or fertility of untreated females mated to treated males.

#### *Pregnancy*

*Pregnancy Category C:* Developmental toxicity studies were performed in rabbits (at doses up to 240 mg/kg/day), dogs (at doses up to 80 mg/kg/day), and rats (at doses up to 640 mg/kg/day). The highest doses in these studies produced systemic exposures in these species comparable to or slightly greater than human exposure. No treatment-related external, visceral, or skeletal changes were observed in rabbits or dogs. No treatment-related external or visceral changes were observed in rats. Treatment-related increases over controls in the incidence of supernumerary ribs (at exposures at or below those in humans) and of cervical ribs (at exposures comparable to or slightly greater than those in humans) were seen in rats. In all three species, no treatment-related effects on embryonic/fetal survival or fetal weights were observed.

In rabbits, at a maternal dose of 240 mg/kg/day, no drug was detected in fetal plasma 1 hour after dosing. Fetal plasma drug levels 2 hours after dosing were approximately 3% of maternal plasma drug levels. In dogs, at a maternal dose of 80 mg/kg/day, fetal plasma drug levels were approximately 50% of maternal plasma drug levels both 1 and 2 hours after dosing. In rats, at maternal doses of 40 and 640 mg/kg/day, fetal plasma drug levels were approximately 10 to 15% and 10 to 20% of maternal plasma drug levels 1 and 2 hours after dosing, respectively.

Indinavir was administered to Rhesus monkeys during the third trimester of pregnancy (at doses up to 160 mg/kg twice daily) and to neonatal Rhesus monkeys (at doses up to 160 mg/kg twice daily). When administered to neonates, indinavir caused an exacerbation of the transient physiologic hyperbilirubinemia seen in this species after birth; serum bilirubin values were approximately fourfold above controls at 160 mg/kg twice daily. A similar exacerbation did not occur in neonates after *in utero* exposure to indinavir during the third trimester of pregnancy. In Rhesus monkeys, fetal plasma drug levels were approximately 1 to 2% of maternal plasma drug levels approximately 1 hour after maternal dosing at 40, 80, or 160 mg/kg twice daily.

Hyperbilirubinemia has occurred during treatment with CRIXIVAN (see PRECAUTIONS and ADVERSE REACTIONS). It is unknown whether CRIXIVAN administered to the mother in the perinatal period will exacerbate physiologic hyperbilirubinemia in neonates.

There are no adequate and well-controlled studies in pregnant women. CRIXIVAN should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

#### *Antiviral Pregnancy Registry*

To monitor maternal-fetal outcomes of pregnant women exposed to CRIXIVAN, an Antiretroviral Pregnancy Registry has been established. Physicians are encouraged to register patients by calling 1-800-258-4263.

#### *Nursing Mothers*

Studies in lactating rats have demonstrated that indinavir is excreted in milk. Although it is not known whether CRIXIVAN is excreted in human milk, there exists the potential for adverse effects from indinavir in nursing infants. Mothers should be instructed to discontinue nursing if they are receiving CRIXIVAN. This is consistent with the recommendation by the U.S. Public Health Service Centers for Disease Control and Prevention that HIV-infected mothers not breast-feed their infants to avoid risking postnatal transmission of HIV.

#### *Pediatric Use*

The optimal dosing regimen for use of indinavir in pediatric patients has not been established. A dose of 500 mg/m<sup>2</sup> every eight hours has been studied in uncontrolled studies of 70 children, 3 to 18 years of age. The pharmacokinetic profiles of indinavir at this dose were not comparable to profiles previously observed in adults receiving the recommended dose (see CLINICAL PHARMACOLOGY, *Pediatric*). Although viral suppression was observed in some of the 32 children who were followed on this regimen through 24 weeks, a substantially higher rate of nephrolithiasis was reported when compared to adult historical data (see WARNINGS, *Nephrolithiasis/Urolithiasis*). Physicians considering the use of indinavir in pediatric patients

without other protease inhibitor options should be aware of the limited data available in this population and the increased risk of nephrolithiasis.

#### *Geriatric Use*

Clinical studies of CRIXIVAN did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. In general, dose selection for an elderly patient should be cautious, reflecting the greater frequency of decreased hepatic, renal or cardiac function and of concomitant disease or other drug therapy.

## **ADVERSE REACTIONS**

### *Clinical Trials in Adults*

Nephrolithiasis/urolithiasis, including flank pain with or without hematuria (including microscopic hematuria), has been reported in approximately 12.4% (301/2429; range across individual trials: 4.7% to 34.4%) of patients receiving CRIXIVAN at the recommended dose in clinical trials with a median follow-up of 47 weeks (range: 1 day to 242 weeks; 2238 patient-years follow-up). The cumulative frequency of nephrolithiasis events increases with duration of exposure to CRIXIVAN; however, the risk over time remains relatively constant. Of the patients treated with CRIXIVAN who developed nephrolithiasis/urolithiasis in clinical trials during the double-blind phase, 2.8% (7/246) were reported to develop hydronephrosis and 4.5% (11/246) underwent stent placement. Following the acute episode, 4.9% (12/246) of patients discontinued therapy. (See WARNINGS and DOSAGE AND ADMINISTRATION, *Nephrolithiasis/Urolithiasis*.)

Asymptomatic hyperbilirubinemia (total bilirubin  $\geq$ 2.5 mg/dL), reported predominantly as elevated indirect bilirubin, has occurred in approximately 14% of patients treated with CRIXIVAN. In <1% this was associated with elevations in ALT or AST.

Hyperbilirubinemia and nephrolithiasis/urolithiasis occurred more frequently at doses exceeding 2.4 g/day compared to doses  $\leq$ 2.4 g/day.

Clinical adverse experiences reported in  $\geq$ 2% of patients treated with CRIXIVAN alone, CRIXIVAN in combination with zidovudine or zidovudine plus lamivudine, zidovudine alone, or zidovudine plus lamivudine are presented in Table 5.

**Table 5**  
Clinical Adverse Experiences Reported in  $\geq 2\%$  of Patients

Adverse Experience	Study 028 Considered Drug-Related and of Moderate or Severe Intensity			Study ACTG 320 of Unknown Drug Relationship and of Severe or Life- threatening Intensity	
	CRIXIVAN Percent (n=332)	CRIXIVAN plus Zidovudine Percent (n=332)	Zidovudin e Percent (n=332)	CRIXIVAN plus Zidovudine plus Lamivudine Percent (n=571)	Zidovudine plus Lamivudine Percent (n=575)
<i>Body as a Whole</i>					
Abdominal pain	16.6	16.0	12.0	1.9	0.7
Asthenia/fatigue	2.1	4.2	3.6	2.4	4.5
Fever	1.5	1.5	2.1	3.8	3.0
Malaise	2.1	2.7	1.8	0	0
<i>Digestive System</i>					
Nausea	11.7	31.9	19.6	2.8	1.4
Diarrhea	3.3	3.0	2.4	0.9	1.2
Vomiting	8.4	17.8	9.0	1.4	1.4
Acid regurgitation	2.7	5.4	1.8	0.4	0
Anorexia	2.7	5.4	3.0	0.5	0.2
Appetite increase	2.1	1.5	1.2	0	0
Dyspepsia	1.5	2.7	0.9	0	0
Jaundice	1.5	2.1	0.3	0	0
<i>Hemic and Lymphatic System</i>					
Anemia	0.6	1.2	2.1	2.4	3.5
<i>Musculoskeletal System</i>					
Back pain	8.4	4.5	1.5	0.9	0.7
<i>Nervous System/Psychiatric</i>					
Headache	5.4	9.6	6.0	2.4	2.8
Dizziness	3.0	3.9	0.9	0.5	0.7
Somnolence	2.4	3.3	3.3	0	0
<i>Skin and Skin Appendage</i>					
Pruritus	4.2	2.4	1.8	0.5	0
Rash	1.2	0.6	2.4	1.1	0.5
<i>Respiratory System</i>					
Cough	1.5	0.3	0.6	1.6	1.0
Difficulty breathing/ dyspnea/shortness of breath	0	0.6	0.3	1.8	1.0

*Urogenital System*

Nephrolithiasis/uroli-	8.7	7.8	2.1	2.6	0.3
thiasis*	1.5	2.4	0.3	0.4	0.2
Dysuria					

*Special Senses*

Taste perversion	2.7	8.4	1.2	0.2	0
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\*Including renal colic, and flank pain with and without hematuria

In Phase I and II controlled trials, the following adverse events were reported significantly more frequently by those randomized to the arms containing CRIXIVAN than by those randomized to nucleoside analogues: rash, upper respiratory infection, dry skin, pharyngitis, taste perversion.

Selected laboratory abnormalities of severe or life-threatening intensity reported in patients treated with CRIXIVAN alone, CRIXIVAN in combination with zidovudine or zidovudine plus lamivudine, zidovudine alone, or zidovudine plus lamivudine are presented in Table 6.

**Table 6**  
Selected Laboratory Abnormalities of Severe or Life-threatening Intensity  
Reported in Studies 028 and ACTG 320

	CRIXIVAN Percent (n=329)	Study 028	Zidovudine Percent (n=330)	Study ACTG 320	
		CRIXIVAN plus Zidovudine Percent (n=320)		CRIXIVAN plus Zidovudine plus Lamivudine Percent (n=571)	Zidovudine plus Lamivudine Percent (n=575)
<i>Hematology</i>					
Decreased hemoglobin <7.0 g/dL	0.6	0.9	3.3	2.4	3.5
Decreased platelet count <50 THS/mm <sup>3</sup>	0.9	0.9	1.8	0.2	0.9
Decreased neutrophils <0.75 THS/mm <sup>3</sup>	2.4	2.2	6.7	5.1	14.6
<i>Blood chemistry</i>					
Increased ALT >500% ULN*	4.9	4.1	3.0	2.6	2.6
Increased AST >500% ULN	3.7	2.8	2.7	3.3	2.8
Total serum bilirubin >250% ULN	11.9	9.7	0.6	6.1	1.4
Increased serum amylase >200% ULN	2.1	1.9	1.8	0.9	0.3
Increased glucose >250 mg/dL	0.9	0.9	0.6	1.6	1.9
Increased creatinine >300% ULN	0	0	0.6	0.2	0

\* Upper limit of the normal range.

**Post-Marketing Experience**

*Body As A Whole:* redistribution/accumulation of body fat (see PRECAUTIONS, *Fat Redistribution*).

*Cardiovascular System:* cardiovascular disorders including myocardial infarction and angina pectoris; cerebrovascular disorder.

*Digestive System:* liver function abnormalities; hepatitis including reports of hepatic failure (see WARNINGS); pancreatitis; jaundice; abdominal distention; dyspepsia.

*Hematologic:* increased spontaneous bleeding in patients with hemophilia (see PRECAUTIONS); acute hemolytic anemia (see WARNINGS).

*Endocrine/Metabolic:* new onset diabetes mellitus, exacerbation of pre-existing diabetes mellitus, hyperglycemia (see WARNINGS).

*Hypersensitivity:* anaphylactoid reactions; urticaria; vasculitis.

*Musculoskeletal System:* arthralgia.

*Nervous System/Psychiatric:* oral paresthesia; depression.

*Skin and Skin Appendage:* rash including erythema multiforme and Stevens-Johnson Syndrome; hyperpigmentation; alopecia; ingrown toenails and/or paronychia; pruritus.

*Urogenital System:* nephrolithiasis/urolithiasis; in some cases resulting in renal insufficiency or acute renal failure; pyelonephritis with or without bacteremia (see WARNINGS); interstitial nephritis sometimes with indinavir crystal deposits; in some patients, the interstitial nephritis did not resolve following discontinuation of CRIXIVAN; leukocyturia; (see PRECAUTIONS), crystalluria; dysuria.

*Laboratory Abnormalities*

Increased serum triglycerides; increased serum cholesterol.

## **OVERDOSAGE**

There have been more than 60 reports of acute or chronic human overdose (up to 23 times the recommended total daily dose of 2400 mg) with CRIXIVAN. The most commonly reported symptoms were renal (e.g., nephrolithiasis/urolithiasis, flank pain, hematuria) and gastrointestinal (e.g., nausea, vomiting, diarrhea).

It is not known whether CRIXIVAN is dialyzable by peritoneal or hemodialysis.

## **DOSAGE AND ADMINISTRATION**

The recommended dosage of CRIXIVAN is 800 mg (usually **two** 400-mg capsules) orally every 8 hours.

CRIXIVAN must be taken at intervals of 8 hours. For optimal absorption, CRIXIVAN should be administered without food but with water 1 hour before or 2 hours after a meal. Alternatively, CRIXIVAN may be administered with other liquids such as skim milk, juice, coffee, or tea, or with a light meal, e.g., dry toast with jelly, juice, and coffee with skim milk and sugar; or corn flakes, skim milk and sugar. (See CLINICAL PHARMACOLOGY, *Effect of Food on Oral Absorption*.)

To ensure adequate hydration, it is recommended that adults drink at least 1.5 liters (approximately 48 ounces) of liquids during the course of 24 hours.

*Concomitant Therapy* (See CLINICAL PHARMACOLOGY, *Drug Interactions*, and/or PRECAUTIONS, *Drug Interactions*.)

*Delavirdine*

Dose reduction of CRIXIVAN to 600 mg every 8 hours should be considered when administering delavirdine 400 mg three times a day.

*Didanosine*

If indinavir and didanosine are administered concomitantly, they should be administered at least one hour apart on an empty stomach (consult the manufacturer's product circular for didanosine).

*Efavirenz*

Dose increase of CRIXIVAN to 1000 mg every 8 hours is recommended when administering efavirenz concurrently (consult the manufacturer's product circular for efavirenz).

*Itraconazole*

Dose reduction of CRIXIVAN to 600 mg every 8 hours is recommended when administering itraconazole 200 mg twice daily concurrently.

*Ketoconazole*

Dose reduction of CRIXIVAN to 600 mg every 8 hours is recommended when administering ketoconazole concurrently.

*Rifabutin*

Dose reduction of rifabutin to half the standard dose (consult the manufacturer's product circular for rifabutin) and a dose increase of CRIXIVAN to 1000 mg (**three** 333-mg capsules) every 8 hours are recommended when rifabutin and CRIXIVAN are coadministered.

*Hepatic Insufficiency*

The dosage of CRIXIVAN should be reduced to 600 mg every 8 hours in patients with mild-to-moderate hepatic insufficiency due to cirrhosis.

### *Nephrolithiasis/Urolithiasis*

In addition to adequate hydration, medical management in patients who experience nephrolithiasis/urolithiasis may include temporary interruption (e.g., 1 to 3 days) or discontinuation of therapy.

### **HOW SUPPLIED**

CRIXIVAN Capsules are supplied as follows:

No. 3755 — 100 mg capsules: semi-translucent white capsules coded "**CRIXIVAN™ 100 mg**" in green. Available as:

**NDC** 0006-0570-62 unit-of-use bottles of 180 (with desiccant).

No. 3756 — 200 mg capsules: semi-translucent white capsules coded "**CRIXIVAN™ 200 mg**" in blue. Available as:

**NDC** 0006-0571-43 unit-of-use bottles of 360 (with desiccant).

No. 3802 — 333 mg capsules: semi-translucent white capsules coded "**CRIXIVAN™ 333 mg**" in red and a radial red band on the body. Available as:

**NDC** 0006-0574-65 unit-of-use bottles of 135 (with desiccant).

No. 3758 — 400 mg capsules: semi-translucent white capsules coded "**CRIXIVAN™ 400 mg**" in green. Available as:

**NDC** 0006-0573-42 unit-dose packages of 42

**NDC** 0006-0573-40 unit-of-use bottles of 120 (with desiccant)

**NDC** 0006-0573-62 unit-of-use bottles of 180 (with desiccant)

**NDC** 0006-0573-54 unit-of-use bottles of 90 (with desiccant)

**NDC** 0006-0573-18 unit-of-use bottles of 18 (with desiccant).

### *Storage*

*Bottles:* Store in a tightly-closed container at room temperature, 15-30°C (59-86°F). Protect from moisture.

CRIXIVAN Capsules are sensitive to moisture. CRIXIVAN should be dispensed and stored in the original container. The desiccant should remain in the original bottle.

*Unit-Dose Packages:* Store at room temperature, 15-30°C (59-86°F). Protect from moisture.

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 **MERCK & CO., INC.**, Whitehouse Station, NJ 08889, USA

Issued  
Printed in USA

**CRIXIVAN® (indinavir sulfate) Capsules**  
Patient Information about  
**CRIXIVAN (KRIK-sih-van)**  
for HIV (Human Immunodeficiency Virus) Infection  
Generic name: indinavir (in-DIH-nuh-veer) sulfate

**ALERT: Find out about medicines that should NOT be taken with CRIXIVAN.** Please also read the section “MEDICINES YOU SHOULD NOT TAKE WITH CRIXIVAN”.

Please read this information before you start taking CRIXIVAN. Also, read the leaflet each time you renew your prescription, just in case anything has changed. Remember, this leaflet does not take the place of careful discussions with your doctor. You and your doctor should discuss CRIXIVAN when you start taking your medication and at regular checkups. You should remain under a doctor’s care when using CRIXIVAN and should not change or stop treatment without first talking with your doctor.

**What is CRIXIVAN?**

**CRIXIVAN is an oral capsule used for the treatment of HIV (Human Immunodeficiency Virus). HIV is the virus that causes AIDS (acquired immune deficiency syndrome).** CRIXIVAN is a type of HIV drug called a protease (PRO-tee-ase) inhibitor.

**How does CRIXIVAN work?**

CRIXIVAN is a protease inhibitor that fights HIV. CRIXIVAN can help reduce your chances of getting illnesses associated with HIV. CRIXIVAN can also help lower the amount of HIV in your body (called “viral load”) and raise your CD4 (T) cell count. CRIXIVAN may not have these effects in all patients.

CRIXIVAN is usually prescribed with other anti-HIV drugs such as ZDV (also called AZT), 3TC, ddI, ddC, or d4T. CRIXIVAN works differently from these other anti-HIV drugs. Talk with your doctor about how you should take CRIXIVAN.

**How should I take CRIXIVAN?**

There are six important things you must do to help you benefit from CRIXIVAN:

1. **Take CRIXIVAN capsules every day as prescribed by your doctor.** Continue taking CRIXIVAN unless your doctor tells you to stop. Take the exact amount of CRIXIVAN that your doctor tells you to take, right from the very start. To help make sure you will benefit from CRIXIVAN, you must not skip doses or take “drug holidays”. If you don’t take CRIXIVAN as prescribed, the activity of CRIXIVAN may be reduced (due to resistance).
2. **Take CRIXIVAN capsules every 8 hours around the clock, every day.** It may be easier to remember to take CRIXIVAN if you take it at the same time every day. If you have questions about when to take CRIXIVAN, your doctor or health care provider can help you decide what schedule works for you.
3. **If you miss a dose by more than 2 hours, wait and then take the next dose at the regularly scheduled time.** However, if you miss a dose by less than 2 hours, take your

missed dose immediately. Then take your next dose at the regularly scheduled time. Do not take more or less than your prescribed dose of CRIXIVAN at any one time.

4. **Take CRIXIVAN with water.** You can also take CRIXIVAN with other beverages such as skim or non-fat milk, juice, coffee, or tea.
5. **Ideally, take each dose of CRIXIVAN without food but with water at least one hour before or two hours after a meal.** Or you can take CRIXIVAN with a light meal.  
Examples of light meals include:
  - dry toast with jelly, juice, and coffee (with skim or non-fat milk and sugar if you want)
  - cornflakes with skim or non-fat milk and sugarDo not take CRIXIVAN at the same time as any meals that are high in calories, fat, and protein (for example — a bacon and egg breakfast). When taken at the same time as CRIXIVAN, these foods can interfere with CRIXIVAN being absorbed into your bloodstream and may lessen its effect.
6. **It is critical to drink plenty of fluids while taking CRIXIVAN.** Adults should drink at least six 8-ounce glasses of liquids (preferably water) throughout the day, every day. Your health care provider will give you further instructions on the amount of fluid that you should drink. **CRIXIVAN can cause kidney stones.** Having enough fluids in your body should help reduce the chances of forming a kidney stone. Call your doctor or other health care provider if you develop kidney pains (middle to lower stomach or back pain) or blood in the urine.

#### **Does CRIXIVAN cure HIV or AIDS?**

CRIXIVAN is not a cure for HIV or AIDS. People taking CRIXIVAN may still develop infections or other conditions associated with HIV. Because of this, it is very important for you to remain under the care of a doctor. Although CRIXIVAN is not a cure for HIV or AIDS, CRIXIVAN can help reduce your chances of getting illnesses, including death, associated with HIV. CRIXIVAN may not have these effects in all patients.

#### **Does CRIXIVAN reduce the risk of passing HIV to others?**

CRIXIVAN has not been shown to reduce the risk of passing HIV to others through sexual contact or blood contamination.

#### **Who should not take CRIXIVAN?**

Do not take CRIXIVAN if you have had a serious allergic reaction to CRIXIVAN or any of its components.

#### **What other medical problems or conditions should I discuss with my doctor?**

Talk to your doctor if:

- You are pregnant or if you become pregnant while you are taking CRIXIVAN. We do not yet know how CRIXIVAN affects pregnant women or their developing babies.
- You are breast-feeding. You should stop breast-feeding if you are taking CRIXIVAN.

Also talk to your doctor if you have:

- Problems with your liver, especially if you have mild or moderate liver disease caused by cirrhosis.
- Problems with your kidneys.

- Diabetes
- Hemophilia
- High cholesterol and you are taking cholesterol-lowering medicines called “statins”.

Tell your doctor about any medicines you are taking or plan to take, including non-prescription medicines, herbal products including St. John’s wort (*Hypericum perforatum*), or dietary supplements.

**Can CRIXIVAN be taken with other medications?\***

**MEDICINES YOU SHOULD NOT TAKE WITH CRIXIVAN**

SELDANE®  
(terfenadine)

VERSED®  
(midazolam)

ORAP®  
(pimozide)

PROPULSID®  
(cisapride)

HISMANAL®  
(astemizole)

HALCION®  
(triazolam)

Ergot medications  
(e.g., Wigraine® and Cafergot®)

Taking CRIXIVAN with the above medications could result in serious or life-threatening problems (such as irregular heartbeat or excessive sleepiness).

In addition, you should not take CRIXIVAN with the following:

Rifampin, known as RIFADIN®, RIFAMATE®, RIFATER®, or RIMACTANE®.

It is not recommended to take CRIXIVAN with the cholesterol-lowering drugs MEVACOR\* (lovastatin) or ZOCOR\* (simvastatin) because of possible drug interactions. There is also an increased risk of drug interactions between CRIXIVAN and LIPITOR® (atorvastatin) and BAYCOL® (cerivastatin); talk to your doctor before you take any of these cholesterol-reducing drugs with CRIXIVAN.

Taking CRIXIVAN with St. John’s wort (*Hypericum perforatum*), an herbal product sold as a dietary supplement, or products containing St. John’s wort is not recommended. Taking St. John’s wort has been shown to decrease CRIXIVAN levels and may lead to increased viral load and possible resistance to CRIXIVAN or cross resistance to other antiretroviral drugs.

Before you take VIAGRA® (sildenafil) with CRIXIVAN, talk to your doctor about possible drug interactions and side effects. If you take VIAGRA and CRIXIVAN together, you may be at increased risk of side effects of VIAGRA-associated adverse events such as low blood pressure, visual changes, and penile erection lasting more than 4 hours. If an erection lasts longer than 4 hours, you should seek immediate medical assistance to avoid permanent damage to your penis. Your doctor can explain these symptoms to you.

**MEDICINES YOU CAN TAKE WITH CRIXIVAN**

RETROVIR®  
(zidovudine, ZDV  
also called AZT)

EPIVIR™  
(lamivudine, 3TC)

ZERIT®  
(stavudine, d4T)

isoniazid  
(INH)

BACTRIM®/SEPTA®  
(trimethoprim/sulfamethoxazole)

DIFLUCAN®  
(fluconazole)

BIAXIN®  
(clarithromycin)

ORTHO-NOVUM 1/35®  
(oral contraceptive)

TAGAMET®  
(cimetidine)

Methadone

VIDEX® (didanosine, ddl) — If you take CRIXIVAN with VIDEX, take them at least one hour apart.

MYCOBUTIN® (rifabutin) — If you take CRIXIVAN with MYCOBUTIN, your doctor may adjust both the dose of MYCOBUTIN and the dose of CRIXIVAN.

NIZORAL® (ketoconazole) — If you take CRIXIVAN with NIZORAL, your doctor may adjust the dose of CRIXIVAN.

RESCRIPTOR® (delavirdine) — If you take CRIXIVAN with RESCRIPTOR, your doctor may adjust the dose of CRIXIVAN.

SPORANOX® (itraconazole) — If you take CRIXIVAN with SPORANOX, your doctor may adjust the dose of CRIXIVAN.

SUSTIVA™ (efavirenz) — If you take CRIXIVAN with SUSTIVA, your doctor may adjust the dose of CRIXIVAN.

**Talk to your doctor about any medications you are taking.**

Calcium Channel Blockers: Tell your doctor if you are taking calcium channel blockers (e.g., amlodipine, felodipine).

**What are the possible side effects of CRIXIVAN?**

Like all prescription drugs, CRIXIVAN can cause side effects. The following is **not** a complete list of side effects reported with CRIXIVAN when taken either alone or with other anti-HIV drugs. Do not rely on this leaflet alone for information about side effects. Your doctor can discuss with you a more complete list of side effects.

**Some patients treated with CRIXIVAN developed kidney stones. In some of these patients this led to more severe kidney problems, including kidney failure or inflammation of the kidneys or kidney infection which sometimes spread to the blood. Drinking at least six 8-ounce glasses of liquids (preferably water) each day should help reduce the chances of forming a kidney stone (see **How should I take CRIXIVAN?**). Call your doctor or other health care provider if you develop kidney pains (middle to lower stomach or back pain) or blood in the urine.**

Some patients treated with CRIXIVAN have had rapid breakdown of red blood cells (hemolytic anemia) which in some cases was severe or resulted in death.

Some patients treated with CRIXIVAN have had liver problems including liver failure and death. Some patients had other illnesses or were taking other drugs. It is uncertain if CRIXIVAN caused these liver problems.

Diabetes and high blood sugar (hyperglycemia) have occurred in patients taking protease inhibitors. In some of these patients, this led to ketoacidosis, a serious condition caused by poorly controlled blood sugar. Some patients had diabetes before starting protease inhibitors, others did not. Some patients required adjustments to their diabetes medication. Others needed new diabetes medication.

In some patients with hemophilia, increased bleeding has been reported.

Severe muscle pain and weakness have occurred in patients taking protease inhibitors, including CRIXIVAN, together with some of the cholesterol-lowering medicines called “statins”. Call your doctor if you develop severe muscle pain or weakness.

Changes in body fat have been seen in some patients taking antiretroviral therapy. These changes may include increased amount of fat in the upper back and neck (“buffalo hump”), breast, and around the trunk. Loss of fat from the legs, arms and face may also happen. The cause and long term health effects of these conditions are not known at this time.

In some patients with advanced HIV infection (AIDS), signs and symptoms of inflammation from opportunistic infections may occur when combination antiretroviral treatment is started.

#### Clinical Studies

Increases in bilirubin (one laboratory test of liver function) have been reported in approximately 10% of patients. Usually, this finding has not been associated with liver problems. However, on rare occasions, a person may develop yellowing of the skin and/or eyes.

Side effects occurring in 2% or more of patients included: abdominal pain, fatigue or weakness, low red blood cell count, flank pain, painful urination, feeling unwell, nausea, upset stomach, diarrhea, vomiting, acid regurgitation, increased or decreased appetite, back pain, headache, dizziness, taste changes, rash, itchy skin, yellowing of the skin and/or eyes, upper respiratory infection, dry skin, and sore throat.

Swollen kidneys due to blocked urine flow occurred rarely.

#### Marketing Experience

Other side effects reported since CRIXIVAN has been marketed include: allergic reactions; severe skin reactions; yellowing of the skin and/or eyes; heart problems including heart attack; stroke; abdominal swelling; indigestion; inflammation of the kidneys; inflammation of the pancreas; joint pain; depression; itching; hives; change in skin color; hair loss; ingrown toenails with or without infection; crystals in the urine; painful urination; numbness of the mouth and increased cholesterol.

Tell your doctor promptly about these or any other unusual symptoms. If the condition persists or worsens, seek medical attention.

#### **How should I store CRIXIVAN capsules?**

- Keep CRIXIVAN capsules in the bottle they came in and at room temperature (59°-86° F).

**This label may not be the latest approved by FDA.  
For current labeling information, please visit <https://www.fda.gov/drugsatfda>**

- Keep CRIXIVAN capsules dry by leaving the small desiccant in the bottle. Keep the bottle closed.

**This medication was prescribed for your particular condition. Do not use it for any other condition or give it to anybody else. Keep CRIXIVAN and all medicines out of the reach of children. If you suspect that more than the prescribed dose of this medicine has been taken, contact your local poison control center or emergency room immediately.**

This leaflet provides a summary of information about CRIXIVAN. If you have any questions or concerns about either CRIXIVAN or HIV, talk to your doctor.

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