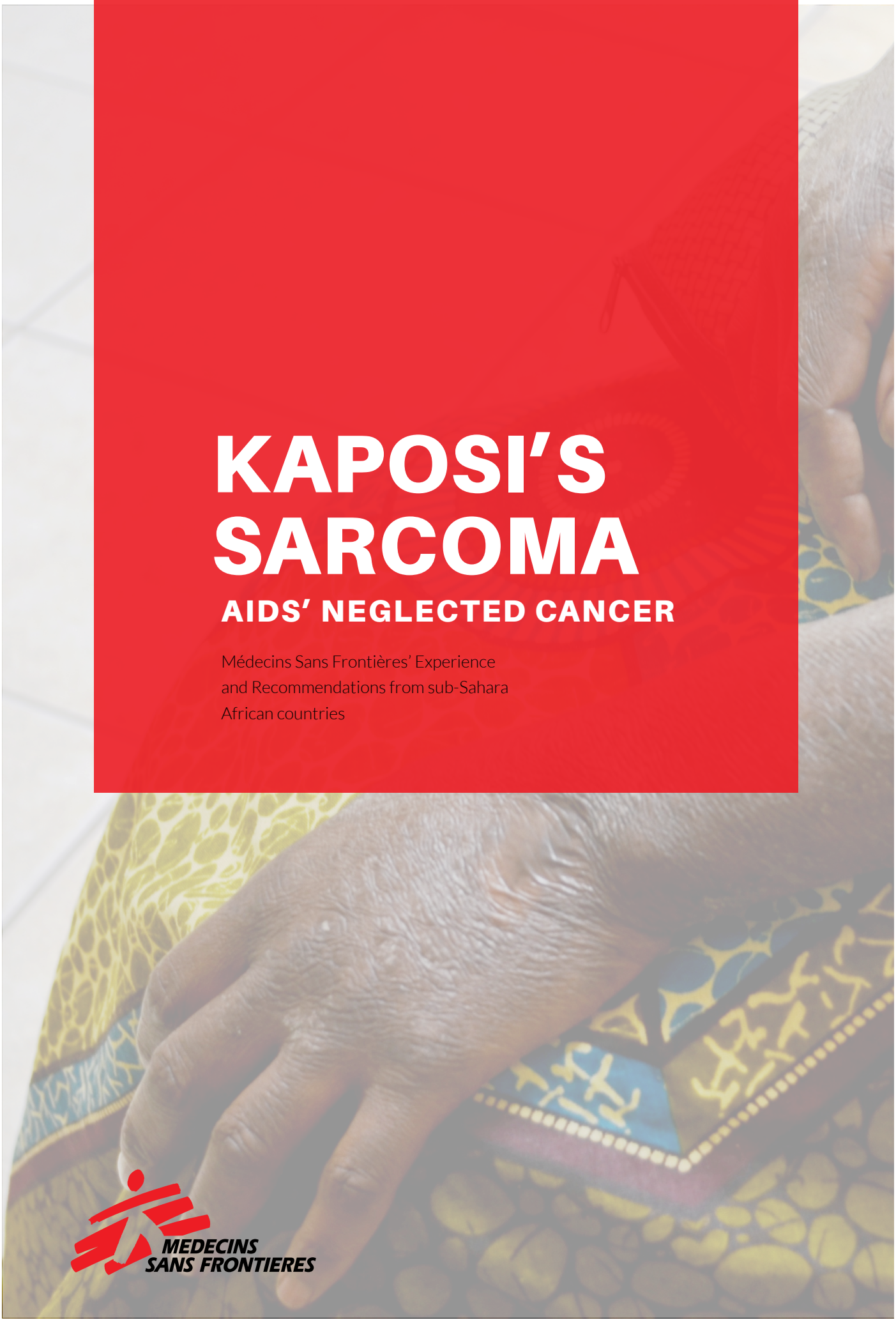

KAPOSI'S SARCOMA

AIDS' NEGLECTED CANCER

Médecins Sans Frontières' Experience and Recommendations from sub-Sahara African countries

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CONTENTS

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All MSF patients featured in this report provided signed informed consent prior to being photographed and agreed to their image being shared. MSF care and treatment is never conditioned upon a patient's willingness to participate in photography or other MSF research or reporting activities.

Design
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EXECUTIVE SUMMARY

Kaposi's Sarcoma (KS) is unique among AIDS-related opportunistic infections.

Its telltale lesions can be disfiguring, extremely painful, and stigmatizing, with systemic involvement that is ultimately life threatening. While considerable progress has been made in the last decades in managing the disease (a 5-year survival rate of 85% in some high-income countries), and a much better quality of life is possible for KS patients than ever before, access to the medicines needed to treat it still poses a significant challenge for many people.[1] The global HIV community currently overlooks this cancer, leaving the majority of those living with KS without any treatment options at all. Even among those who do get treatment, up to half are lost to follow up while in care.[2] Over the last twenty years, Médecins Sans Frontières (MSF) has provided KS treatment at nearly a dozen sites across eight sub-Saharan African countries. This briefing document serves to share some of that experience, with recommendations for actions that could immediately create a path to better treatment, survival, and quality of life for patients with KS.

> *"At home I always wear regular clothes, but in the streets or if I'm going on public transportation I cover up, I wear sleeves and long skirts because people ask "What's wrong with you?" and I don't really like that. I'll be on a bus and people will ask me about my condition and even after I explain people still know it's 'that disease,' as we call it: HIV..."*
>
> **-Angelina, 34, Mozambique[3]**

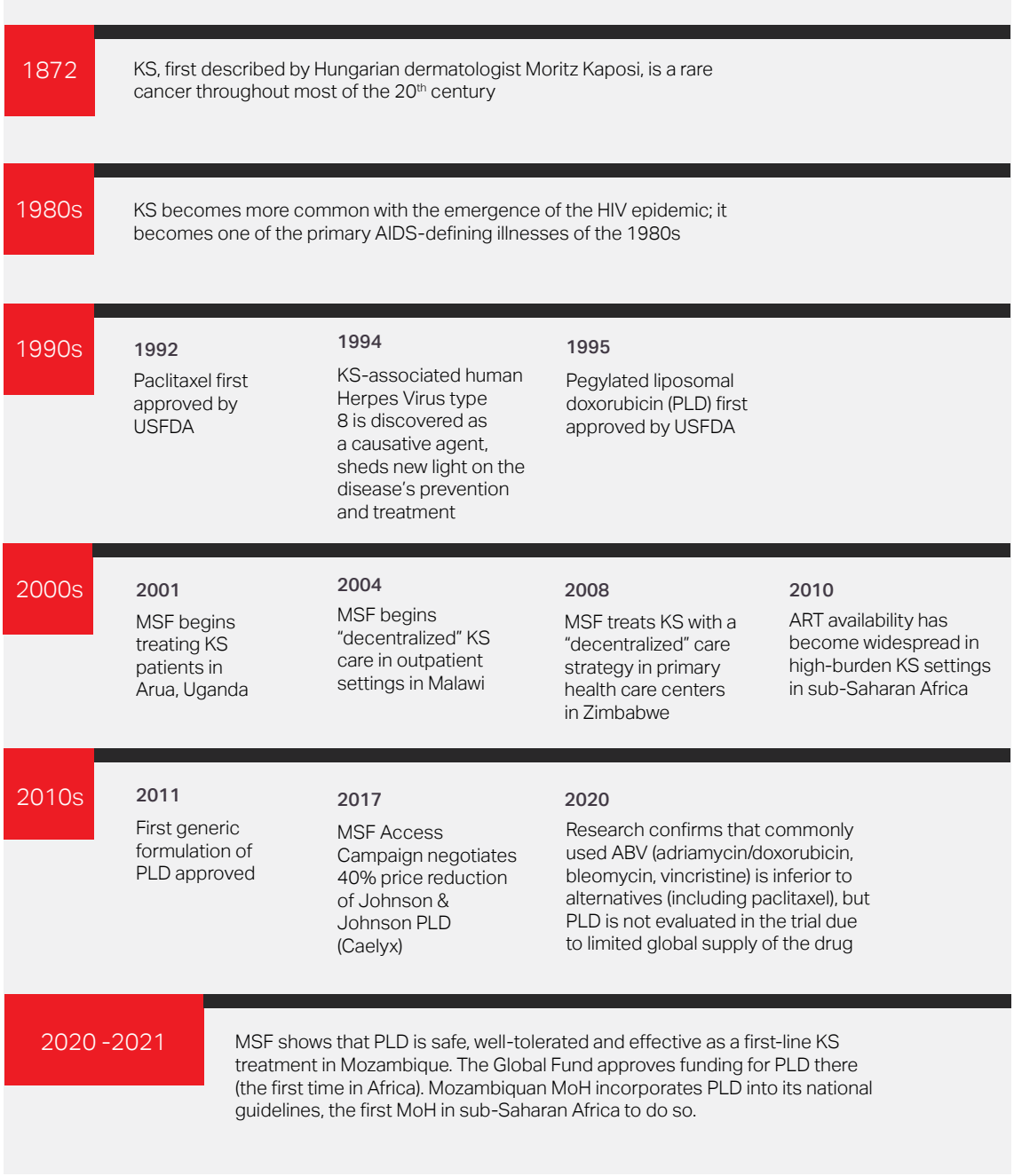
INTRODUCTION

Kaposi's Sarcoma (KS), an aggressive disease whose telltale lesions affect the skin, mouth, throat, lymph nodes, and organs, is a significant burden in regions with a high prevalence of HIV, despite being treatable. Unlike many cancers, KS lesions are often visible, extremely painful, and can be disfiguring and difficult to hide. Shame and stigma associated with the disease can be extreme. In advanced cases, KS includes systemic involvement (e.g. lungs) and may lead to death.

KS treatment depends on the stage of disease.[4] The initial, critical step for people living with HIV (PLHIV) is anti-retroviral therapy (ART), which improves a patient's KS by first strengthening their immune system. KS lesions also require additional local intralesional, systemic chemotherapy or radiation treatment, however intralesional and radiation therapies are rarely available in Low- or Middle-Income Country (LMIC) settings. When lesions are extensive, KS can be successfully treated with adequate chemotherapy, which substantially

improves patients' quality of life and chance of survival, whereas without treatment or with less effective chemotherapy, life expectancy can be less than six months.[5] In sub-Saharan Africa, the region with the highest prevalence of the disease, ART is now widely available for HIV, yet KS treatment remains almost entirely out of reach despite well-established chemotherapies being available for more than 20 years. Médecins Sans Frontières (MSF) is a humanitarian medical organization present in many areas of sub-Saharan Africa that have a high KS burden. The following report documents our experience since 2000 treating the AIDS-associated form of this cancer in eight countries at 11 clinical sites, as well as some recommendations for improving access to KS care.

Figure 1. History of Kaposi's Sarcoma and its Treatment



THE GLOBAL BURDEN: AN INCOMPLETE PICTURE

Prior to the emergence of HIV in the 1980s, KS was a relatively rare cancer worldwide. The causal agent of the cancer, Kaposi's sarcoma-associated herpes virus (KSHV, or Human Herpes Virus 8 – HHV8), was identified in 1994 and shed new light on the disease's prevention and treatment.[6] KSHV does not often lead to KS, but HIV-related immunocompromise allows it to progress and, as a result, the world's burden of KS is concentrated in areas and populations most affected by HIV. The disease today most heavily affects parts of sub-Saharan Africa, where 86% of KS-associated deaths occur.[7] Across this region, KS is a major cause of illness and death in PLHIV.

Yet the true burden of KS disease (and most other cancers) in low resource settings is largely unknown since cancer registers usually do not exist for the condition. Even when statistics are available, details are absent regarding the patients' clinical staging at presentation, demographic characteristics, risk factors, response to chemotherapy, or its side effects. In sub-Saharan Africa, the disease is usually only reported in people who have had the condition confirmed by a biopsy. However, access to biopsy is extremely rare in low resource settings and often only available in centralized cancer centers focused on specific populations (like children, HIV/AIDS patients, research participants). Biopsy is therefore not often done, and data is incomplete. Moreover, because access to chemotherapy is so limited, and because communities often have so little information about KS overall (and so may not recognize KS lesions when they appear) many do not manage to access care for the condition.

STAGING KAPOSI'S SARCOMA

KS is classified according to a cancer staging scale based on the size of a patient's primary tumor (the first tumor to develop) and how far the cancer has spread from there. For people with AIDS-related KS, the presence of other AIDS-related problems, such as how much the immune system is affected and the presence of other infections, also influence the stage. For AIDS-related KS the staging scoring system used is based on the AIDS Clinical Trials Group system which is based on the extent of the condition and systemic involvement.

Figure 2. Classifying Kaposi's Sarcoma: staging scores

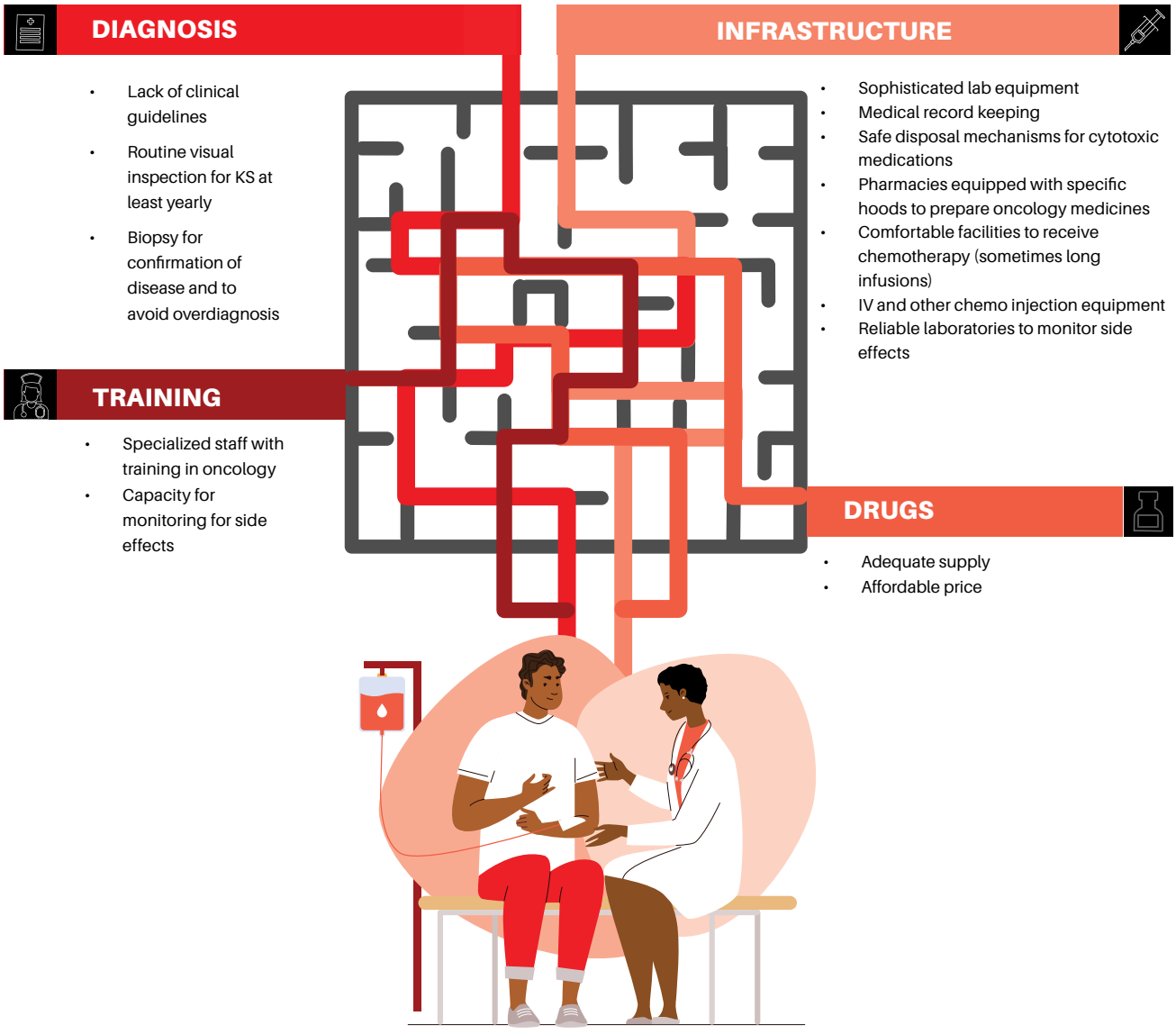
T0	KS is only in the skin and/or the lymph nodes, and/or there is only a small amount of disease on the roof of the mouth. The KS lesions in the mouth are flat rather than raised. These patients can sometimes be treated with ART alone and may not need chemotherapy.
T1	The KS lesions are widespread. One or more of the following is present: edema, extensive oral KS (raised lesions), KS lesions on organs other than the lymph nodes. These patients should be immediately started on chemotherapy.
S0	No systemic illness present. No history of opportunistic infections or thrush; no unexplained fevers, night sweats or sudden weight loss of more than 10%. Karnofsky performance status (KPS) of 70 or higher (meaning the patient is up and about and able to take care of themselves most of the time).
S1	History of opportunistic infections or thrush, one or more B symptoms§, KPS score less than 70, other HIV illnesses present.

*T = Tumor; S = Systemic illness extent in the body (how sick the patient is with cancer or HIV); 1 = poor risk; 2 = High risk §= Unexplained fever, night sweats, involuntary weight loss of more than 10%

TREATMENT AND CARE: COMPLEX BUT POSSIBLE

As with all cancer care in low resource settings, chemotherapy drugs are not the only element needed to achieve successful outcomes. Though much progress could be made with the simpler, more affordable, and easier to administer treatments, policymakers should not forget the other pieces of the full package of treatment. Chemotherapy requires injectable medicines, mainly administered by infusion and monitored over several hours, along with specialized equipment and specialized facilities to provide it. This includes safe and comfortable places to treat patients as well as human resources and laboratories to monitor and treat side effects (most chemotherapies have substantial, sometimes difficult-to-monitor toxicities that demand dedicated staff training or sophisticated health infrastructure). Because chemotherapy medications are generally considered to be toxic, it requires special considerations to prepare, store, and dispose of them, and the appropriate infrastructure, like biosafety cabinets, are needed to protect staff (Figure 3).[8]

Figure 3. KS care is complex but possible



In many countries, care for patients with KS occurs as an outpatient service in a central urban hospital. Care providers and standards may vary; a patient may be seen by dermatology, oncology, or HIV staff depending on the organization of the health care system.

Access to chemotherapy – even when health infrastructure can provide it – can be challenging. KS chemotherapies face both production and procurement hurdles and can be prohibitively expensive. While there are several generic manufacturers of the most optimal chemotherapies (like less toxic PLD and paclitaxel), few are registered or available in sub-Saharan Africa. Their prices may also be beyond the means of many governments and patients – even in the case of relatively "low-cost" generic products. As a result, chemotherapy is rarely available for KS or any other cancer in much of sub-Saharan Africa. Even when treatment is available, general health systems barriers further complicate KS treatment, including a lack of clear guidelines and protocols, little opportunity for oncological training, few diagnostic tools, and almost no histopathology laboratories. Many early cases are missed but could be detected with routine visual inspection (a first-line KS diagnostic) of PLHIVs' mouths, skin, and other areas at each clinical interaction with a patient with advanced HIV disease.

ACCESS TO CHEMOTHERAPY: TOO LITTLE SUPPLY AT TOO HIGH A COST

The first-line standard of care has historically been (and often still is) a combination of bleomycin and vincristine (BV), with or without conventional adriamycin/doxorubicin (ABV). Yet, these drugs are not as efficacious compared to PLD and paclitaxel, are more labor-intensive to prepare, administer and poorly tolerated in terms of adverse effects (see Table 2). Mortality, side effects, and loss-to-follow-up rates are high, remission is uncertain, and advanced disease at presentation means that patients may need additional cycles of chemotherapy (which increases the risk of severe side effects, which in turn makes the patient less likely to continue treatment).

As a second-line treatment, paclitaxel is often not in national treatment protocols and thus not routinely available.[9,10,11] Yet, research from Kenya showed that replacing all (A)BV with paclitaxel could save nearly 6400 years of life over 5 years.[12] PLD has also been shown to be well tolerated, effective, and to substantially improve quality of life and reduce pain in low-resource settings ("spotlight" page 8), though it has a much higher cost than most other KS treatments[9,13] Cost-benefit analysis showed that PLD would be cost-effective compared to paclitaxel if a 44% price reduction was achieved. The researchers appealed for urgent advocacy to drop PLD's price, similar to how price negotiations contributed to substantial reductions in the cost of ART in LMICs over the past 20 years.[12]

PLD and paclitaxel are considered the gold standard treatments in many high-income countries and are recognized as the most active agents against AIDS-related KS, with much better toxicity than other chemotherapy regimens.[13] Yet, neither are readily available in most low resource environments, with high prices for some, few quality-assured manufacturers, and frequent supply shortages and stockouts.

SPOTLIGHT ON: PEGYLATED LIPOSOMAL DOXORUBICIN (PLD)

PLD was first approved for treating cancer by the USFDA in 1995. The drug stays longer in the blood and has fewer adverse effects than other KS chemotherapies.[14] It is no longer under patent (sold to Baxter Healthcare in 2021) yet remains almost entirely unavailable in countries with a high prevalence of KS. This is largely because, as a Non-Biological Complex Drug (NBCD), PLD is somewhat more complicated to manufacture, with complex regulatory pathways, and few generic versions on the market. This leads to unaffordable pricing, a lack of registration, and intermittent global shortages. PLD is also not on the WHO Essential Medicines List (though it was submitted for consideration to EML in 2023) and is not yet eligible for evaluation by the WHO Prequalification Unit, though both PLD and paclitaxel are featured in the WHO's 2014 Guidelines for treating skin and oral HIV-associated conditions in children and adults.

Since 2018, MSF has used PLD to treat KS in PLHIV in multiple countries, with favorable experiences overall, finding it effective and tolerable for patients and easy to use for staff.[9] Yet PLD is priced far out of reach for most countries, whether from the originator or generic manufacturers. In South Africa, for example, where only the originator PLD is registered at $520 USD per 20 mg vial (on the private market), six rounds of chemotherapy can cost over $6,252.[15] Furthermore, global shortages of the drug are common, including in high-income markets. Several generic manufacturers are approved by the USFDA, including Sun Pharma and Dr. Reddy's Lab, but there has been limited registration of the drug in sub-Saharan African countries and prices remain high in 2023 (see Table 1).

PLD is an important KS treatment, but prices need to come down for it to be a realistic option for the majority of the world's KS patients.

SPOTLIGHT ON: PACLITAXEL

Few treatment options exist for patients with advanced KS. Among the best available is paclitaxel, a medicine also used to treat many other cancers. Like other oncological treatments, it is given intravenously and requires pre-treatment with corticosteroids, antihistamines, and H2-receptor antagonists. It can cause vein inflammation (or tissue damage if it escapes a vein), so staff must be carefully trained to administer it.

In the largest clinical trial examining paclitaxel use in Africa, the drug was clearly superior when compared to other regimens (etoposide, or bleomycin, and vincristine/BV). Patients on paclitaxel lived substantially longer without disease progression, were far more likely to see their tumors reduce in size for longer amounts of time, and could receive treatment every three weeks (instead of two) with fewer side effects. Neutropenia, a condition that can increase patients' overall risk of infection, was much lower.[10]

Paclitaxel is on the WHO Essential Medicines List and should be included by countries in their national EMLs. Generic formulations are available, and the overall price of treatment is a third of that of PLD. However, an urgent question remains: will PLD or paclitaxel provide the best outcomes, with the fewest side effects? Only one study looked at this question and found that the two treatments were similar in terms of patient response rates and survival, but that paclitaxel had somewhat higher rates of side effects.[16] Yet, this study was too small to be conclusive, and it is now over twenty years old. Newer, larger clinical trials are needed to resolve this question.

Table 1. Prices of various treatment regimens for Kaposi's Sarcoma

REGIMEN	DRUG	PRICE PER UNIT[17]	DOSE*	QTY NEEDED PER CYCLE	COST PER CYCLE	
					BY DRUG	TOTAL
BV (Bleo dose: 15 IU/m^2)	Bleomycin (15,000 IU/vial)	$32.34 USD / 15,000 IU vial	27,500 IU	2 vials	$64.68	$77.07
	Vincristine (1 mg/ml)	$12.39 USD / 2 mg vial	2 mg**	1 vial	$12.39	
ABV (Bleo dose: 10 IU/m^2)	Doxorubicin (2 mg/ml)	$6.47 USD / 50 mg vial	46 mg	1 vial	$6.47	$83.54
	Bleomycin (15,000 IU/vial)	$32.34 USD / 15,000 IU vial	18,300 IU	2 vials	$64.68	
	Vincristine (1 mg/ml)	$12.39 USD / 2 mg vial	2 mg**	1 vial	$12.39	
Paclitaxel	Paclitaxel (6 mg/ml)	$22.51 USD / 300 mg vial	183 mg	1 vial	$22.51	$22.51
PLD	Pegylated Liposomal Doxorubicin	$152.50 USD / 50 mg vial $139.40 USD /20 mg vial	37 mg	1 x 50 mg vial OR 2 x 20 mg vial	$152 – 279	$152 – 279

** Corresponds to a 1.83M^2, 70kg, 175 cm adult*
*** max 2 mg per week of vincristine*
Note: prices were correct as of Aug. 2022

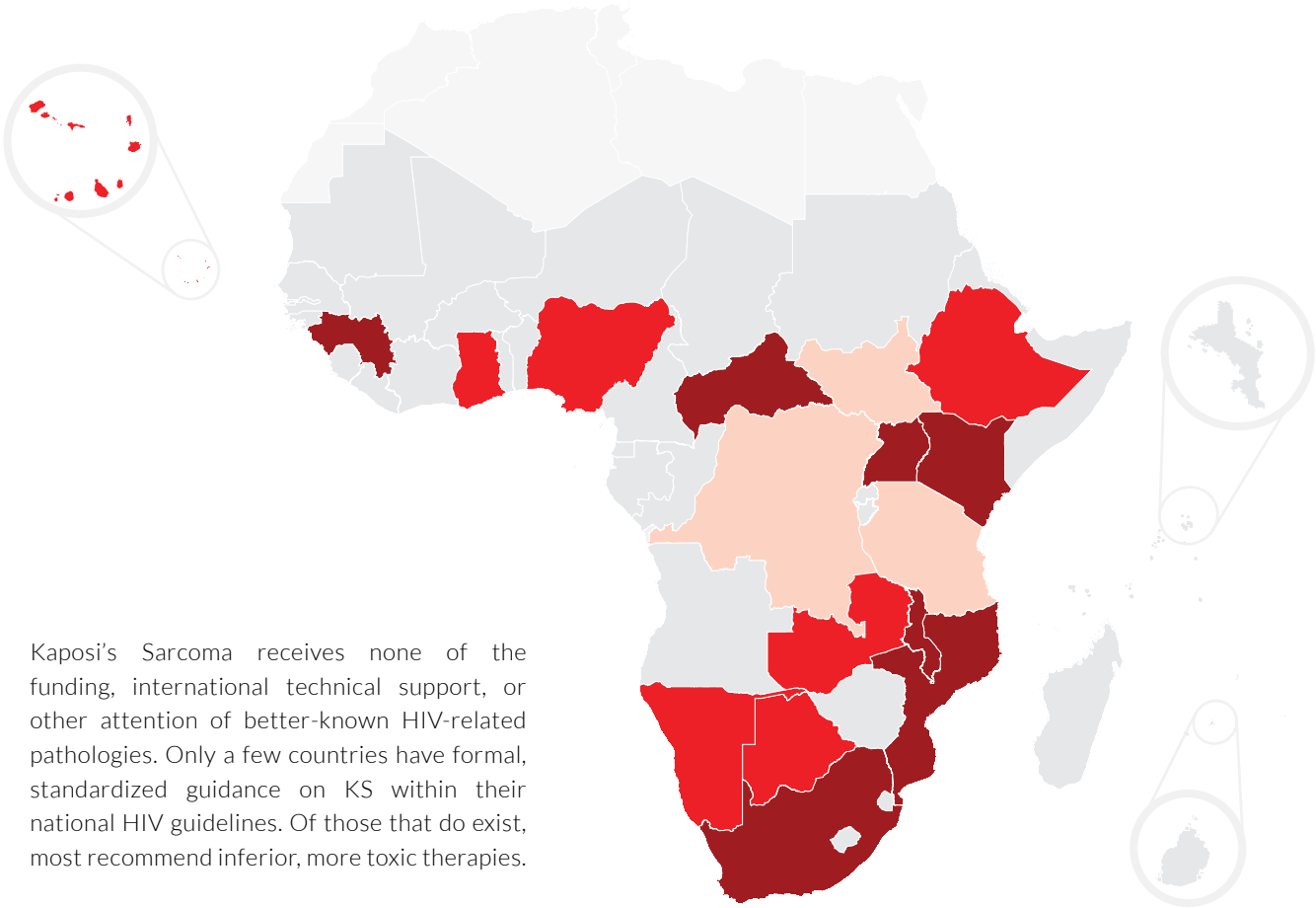
Table 2. Advantages & disadvantages of various treatment regimens for Kaposi's Sarcoma

DRUG†	USE	DISADVANTAGES	ADVANTAGES
Bleomycin, Vincristine (BV) ± Doxorubicin (ABV)	Historic standard 1st line option in LRS	Despite low cost and wide adoption, supply often unstable. Vincristine: neuropathy, mild hematologic toxicity Doxorubicin: myelosuppression, cardiotoxicity requiring strict monitoring of the maximal cumulative dose, alopecia, emesis, infusion-related hypotension and nausea	Affordable
Pegylated Liposomal Doxorubicin (PLD)	Gold standard in HIC	Adverse effects: Myelosuppression, cardiotoxicity, some cases of alopecia , emesis, infusion-related hypotension, hand/foot syndrome	Less side effects compared to ABV, fewer treatment cycles required, less time-to-remission, improved quality of life/patient outcomes, possible to use in decentralized care (although not in severe cases)
Paclitaxel*	Good 1st line option for LRS; standard in HIC	Long administration time (3-hour infusion vs 30 minutes for PLD); corticosteroid needed to prevent allergic reactions, other pre-medications often needed Adverse effects: Peripheral neuropathy, neutropenia, alopecia, myalgias, myelosuppression	Affordable. High response rate, superior efficacy as compared to BV and oral etoposide[18] (toxicities largely the same)**, Less reported production shortages

HIC=High Income Country; LRS=Low Resource Settings; SAE=Severe Adverse Effects; MoH=Ministry of Health
†All available as generics, all available in 2017 WHO List of Essential Medicines (except PLD), all have potential interactions with ART
** Wide price variability in different markets*
*** Direct comparison of PLD and paclitaxel effectiveness unavailable at time of writing*
Note: prices were correct as of Aug. 2022

Most published literature on KS in resource limited settings reiterates the urgent need to find alternative chemotherapy options that are more efficient, less toxic, easier to administer, and would enable the decentralization of treatment and improve access to care. MSF's experience across a variety of settings shows that there is no one-size-fits-all solution in terms of KS chemotherapy, but that wider access to KS treatment in general must be urgently prioritized. An important step in doing so will be to establish formal KS treatment protocols in all settings with a high burden of HIV. Currently, many of these high-burden countries lack formal guidance for KS care in their national HIV guidelines and protocols. Of those that do exist, most recommend inferior, and more toxic therapies. The WHO has similarly not produced updated international KS guidance since 2014, which could help fill this gap in KS treatment information and standards in low resource settings. While the WHO Essential Medicines List (EML) includes some oncologic KS medicines such as vincristine, bleomycin, paclitaxel and conventional doxorubicin, PLD has not been included as of yet. Including it in this list will support the inclusion of this medicine on national EMLs and formularies.

Figure 4. KS protocol availability in sub-Saharan Africa, April 2022



Kaposi's Sarcoma receives none of the funding, international technical support, or other attention of better-known HIV-related pathologies. Only a few countries have formal, standardized guidance on KS within their national HIV guidelines. Of those that do exist, most recommend inferior, more toxic therapies.

Data reflects protocols that were publicly available as of August 2021

CASE STUDY: HIGH QUALITY CARE USING PLD IN MOZAMBIQUE

In Mozambique, the burden of KS is high, yet until 2016 the country's national HIV treatment guidelines recommended an inferior 1st line treatment (using bleomycin, vincristine and doxorubicin (ABV), which was not widely available in the country). As a result, MSF teamed up with Mozambique's Ministry of Health (MoH) and other key allies to change treatment protocols nationwide, replacing ABV with PLD as the standard 1st line treatment, and working to improve access to the drug.

PLD is more effective and less toxic than ABV. When used as a first-line treatment, it provides a standard of care similar to well resourced settings in high income countries. Yet the drug is far more expensive than most other choices. The MoH and MSF began treating a cohort of patients with PLD in Tete, in central Mozambique in 2008, and in the capital Maputo in 2016. MSF simultaneously studied the drug's effectiveness in real-world, resource-constrained clinical settings. A study in Maputo followed 130 participants receiving PLD on three-week cycles. At 24 months, 20% (23) had died and 13% (15) were lost to follow-up, but 92 participants achieved complete or partial remission during the study (overall response rate 80%), including 15 (13%) who achieved complete remission. These results are extremely encouraging.

The Mozambique study and experience filled important information gaps and helped demonstrate the relevance and importance of PLD in that context, and the MoH now recommends PLD as first-line treatment in their national guidelines. Mozambique MoH has also secured financing from The Global Fund to Fight AIDS, TB and Malaria (GFATM) to purchase the drug. Similar countries could replicate the Mozambique model by modifying their national treatment protocols and requesting funding from GFATM or other donors to better support patients affected by KS.

CASE STUDY: PACLITAXEL USE IN WEST AFRICA

Guinea Conakry continues to recover from the 2016 Ebola outbreak that seriously impacted its fragile health system and was a major setback in the fight against HIV. Though the prevalence of HIV in the country is relatively low (1.4% in 2020), barely half (49%) of people living with HIV (PLHIV) are taking antiretroviral therapy (ART), and testing was similarly low. As a result, most patients present to care at very late stages of disease, often with serious co-morbidities like Kaposi's Sarcoma (KS). In 2021, nearly 25% of PLHIV with advanced HIV presented with KS (usually also in an advanced stage). Nearly 90% of these KS patients required chemotherapy.

KS is the third major cause of hospital admissions and the leading cause of death at the Dermatology Unit of Donka National Hospital (DNH) in Conakry. Since 2012, MSF has been providing chemotherapy for KS at no cost, in a strong collaboration with the Ministry of Health. MSF's standard KS treatment regimen has evolved during that time, from BV to first line PLD then to paclitaxel used as a first line treatment in 2020.

Since December 2020, nearly half (46%) of the MSF/MoH KS patients in Conakry have been treated with paclitaxel. It is not possible to say with the limited data available whether paclitaxel was more effective or less toxic than other treatment regimens. However, after treating 56 patients over the course of two years, staff were able to anecdotally report that there were not noticeably higher levels of side effects and that treatment effectiveness seemed similar to other available KS therapies. Moreover, paclitaxel's three dosing regimens (low, middle, high dose) allowed clinicians to easily tailor treatment to the wide spectrum of disease seen at DNH. This also would contribute to the drug being suitable for settings with limited ability to conduct routine treatment monitoring and allow clinicians to start patients on low-dose chemotherapy without risking serious cardio- and nephrotoxicity or allergic reactions while awaiting other test availability and results.

However, there are challenges remaining to be addressed. MSF and the Donka center in Conakry are the only place in the country where KS care is provided. Patients often have to travel long distances to receive their chemotherapy treatments. This contributes to high dropout rates when patients cannot make the bi-weekly trips because of a lack of money or time. Demand is also high (an average of 3 new patients begin chemotherapy each month), and the center can also become overwhelmed, forcing some patients to have to wait weeks to begin treatment, even when they have painful, advanced disease. Finally, though MSF works with a strong treatment community and has a solid partnership with expert counterparts at the Ministry of Health, the country's national HIV protocols provide no formal guidance on the diagnosis and management of KS, meaning that beyond MSF, no Guinean actors have been able to prioritize or treat the disease.

> *"I discovered that I had HIV [and] was diagnosed with Kaposi's sarcoma. I had a few spots and was feeling very strong pain...The first chemotherapy session was not easy, but then I got used to it. Now I feel very well. The treatment I am doing is reacting well in my body. Before it was very bad, my feet were swollen, I did not wear pants or shoes. I could not walk, but now I'm fine, I am back to my normal life. I have been undergoing treatment for seven months, and I have only two chemotherapy sessions to complete the Kaposi treatment."*
>
> **-Luisa Enoque Comiche, 37, MSF Patient, Mozambique**[19]

CONCLUSION

Though progress has been made in addressing major causes of AIDS-related mortality like TB and cryptococcal meningitis, KS remains neglected despite its onerous toll on many PLHIV. Substantial, multi-layered barriers exist to better care for these patients, the true number of which is currently unknown. Improved access to existing and better KS treatments for PLHIV should be prioritized by the global AIDS community and could benefit those requiring treatment for other cancers as well. When PLD or paclitaxel use is not possible for financial or supply related reasons, other WHO-recommended treatment alternatives should be considered. As with other aspects of HIV care, decentralized care and pragmatic treatment options should be considered to respond to patients' immediate and urgent need for treatment, even if the options are not always optimal.

KS disease sits at the intersection spanning the challenges of advanced HIV care, opportunistic infections, and cancer care. By making tangible progress towards improved KS outcomes, we may also improve care and access to oncology treatment for people with other forms of cancer.

KEY RECOMMENDATIONS

Kaposi's Sarcoma is an undertreated AIDS-defining cancer that needs more attention in low resource health systems, especially in sub-Saharan Africa. Various stakeholders have a role to play in improving access to treatment for KS.

World Health Organization (WHO):

- **WHO guidelines on screening, diagnosis and treatment of Kaposi's Sarcoma should be updated** to provide detailed clinical guidance and potential models of care for low resource settings (LRS), including evidence-based recommendations for chemo-therapeutic regimens.
- **Pegylated Liposomal Doxorubicin (PLD) should be added to the WHO's Essential Medicines List** (EML) for the treatment of KS.

Ministries of Health:

- **Prioritize chemotherapy** for KS in national HIV programs and emphasize its importance to donors, including it in requests for funding from Global Fund and PEPFAR and other international donors.
- **Include chemotherapy for KS in National HIV guidelines and Essential Medicines Lists**.
  - KS screening, diagnosis, and treatment guidance should be included in national HIV protocols as part of a package of advanced HIV care, including more effective treatments like pegylated liposomal doxorubicin (PLD) and paclitaxel.
  - KS screening guidance should include full-body physical examination with active screening and visual inspection of KS lesions for people living with HIV (PLHIV) at initiation or re-engagement in care, when identified with advanced HIV disease, or with a high viral load.
- **Improve surveillance and data collection** nationally to improve understanding of epidemiology and true burden of disease. Factors such as clinical stage at presentation, demographic characteristics and risk factors should be included. Data should be standardized and regularly analyzed at MoH level over short and long term to allow comparison over time and between different contexts.
- **Invest in the infrastructure** to safely store, administer, and dispose of chemotherapy including facilities where patients can safely and comfortably receive infusions, with trained staff and prompt laboratory results to monitor side effects. Special consideration needed for rural settings where there are no or very few locations to access treatment in the country.
- **Include KS chemotherapy in national tenders** to benefit from economies of scale and competition to reduce prices.

Civil Society Organizations:

- **Support improved health literacy** for people at high risk of KS to facilitate earlier diagnoses and better outcomes. These education efforts should include reducing stigma and supporting individuals to be more confident in their healing process.
- **Advocate** for governments and donors to include KS treatments in forecasting, procurement, and budgets.

International Donors:

- **Global Fund, PEPFAR, and international donors** should include KS diagnostic tools and medicines for funding eligibility.
- **Include KS chemotherapy in their tenders** to create economies of scale and competition to reduce prices.
- **Support countries' procurement needs**, market shaping and demand creation including identification of quality assured sources of medicines and pooling procurement to allow competition and price reduction.

Pharmaceutical Manufacturers:

- **Ensure production capacity** to meet demand for PLD and paclitaxel, **register them broadly across LMICs and participate in MOH tenders** across high-burden KS countries to improve availability of quality assured treatment options in these countries.

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