ZKRD
Zentrales
Knochenmarkspender-
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ZKRD's Rules of Operation for International Partners

This translation is intended to aid in reading the original document and is not legally binding. The text was translated to the best of our knowledge, and no responsibility is taken for translational errors or outdated content.

Contents

1 Introduction

1.1 Purpose of this Document

This document gives basic information to registries or transplant centers outside Germany on how to access German donors through the ZKRD. It also provides an overview on our business processes and the resulting expectations we have when requesting services abroad for our patients.

The document addresses experienced staff of registries and transplant centers involved in hematopoetic stem cell transplantation and gives references regarding certain aspects of the search process and the access to our donors in general. It is not intended to provide comprehensive or detailed insight into registry activities or to replace other specific documentation from the ZKRD.

More specific information on requirements of our registry can be found in the German Standards (`www.zkrd.de/en/about_the_zkrd/german_standards.php`). Please also refer to the WMDA Standards as an international reference (`www.wmda.info/professionals/quality-and-accreditation/wmda-standards`).

1.2 ZKRD and Related Institutions

The ZKRD was created in 1992 with the support of the German Ministry of Health as the national hub for unrelated donor searches. At the national level, ZKRD currently cooperates with about 30 donor centers, about 70 transplant centers and about 20 search units.

- **Donor Centers (DC)** in Germany are responsible for recruiting donors and managing services involving personal contact with the donor including fulfilling all donor-specific requests.
- **Search Units (SU)** are responsible for all communication and decisions in the donor search process for the patients of one or more transplant centers, typically up to the identification of a suitable donor.
- **Transplant Centers (TC)** perform the actual transplants and typically take over the process from the Search Unit when a work-up is initiated.

Internationally, ZKRD cooperates with registries worldwide and maintains direct contact with TCs outside Germany, particularly where no established registry support for

performing international donor searches and obtaining foreign products exists.

Generally, ZKRD tries to streamline the search process for national and international patients as far as possible. In particular it encourages

- hub-to-hub communication as a service to national TCs and DCs,
- the utilization of computer links based on the EMDIS standard to automate processing and
- the use of forms according to WMDA standard content templates (see `https://partner.zkrd.de/en/contents/22`, Login required, for ZKRD forms).

ZKRD has been WMDA accredited since 2007. All German cooperative partners must adhere to the WMDA Standards as well as to the German Standards including all pertaining national and international laws and regulations.

1.3 Contact Details

ADDRESS:	ZKRD Zentrales Knochenmarkspender-Register für die Bundesrepublik Deutschland gemeinnützige GmbH (German National Bone Marrow Donor Registry) Helmholtzstraße 10, 89081 Ulm, Germany
MAIL ADDRESS:	POB 4244, 89032 Ulm, Germany
E-MAIL:	secretary@zkrd.de
PHONE:	
Secretary	(+49) 731-1507-000
STS Search	(+49) 731-1507-220
STS Work-up	(+49) 731-1507-240
STS Transportmanagement	(+49) 731-1507-260
STS Post-TX	(+49) 731-1507-280
Finance	(+49) 731-1507-300
IT-Department	(+49) 731-1507-400

2 Obtaining Donors through ZKRD

2.1 Patient-Related Information

2.1.1 Preliminary Search

Preliminary searches can routinely be initiated from outside of Germany

- by registries that are operating according to WMDA standards on behalf of cooperating TCs in their country or
- by TCs from countries without an established registry or which have a compelling reason to ask for direct cooperation with ZKRD.

TCs seeking a direct cooperation with ZKRD should have an accreditation for allogeneic transplants from JACIE or a comparable organization. If such accreditation is not available, TCs may establish their eligibility by providing specific details which may be subject to approval by the Medical Director (form SU_009, available upon request).

Searches at ZKRD are typically initiated

- using the EMDIS network,
- or using the WMDA preliminary search form,
- or an equivalent.

In addition to patient name and HLA data (recommended in high resolution), birthdate, diagnosis and gender of the patient are required before starting a search. It is recommended to provide the intended transplant centre when initiating a search in order to prevent delays later during the search or work-up process.

Technical information/EMDIS

Incoming patient update [PAT_UPD]

- We require serological or molecular data for at least HLA-A, -B and -DR(B1); no serological data are required and no mapping from serology to DNA or vice versa should be performed.
- Patients older than 85 years are rejected.

- Combination of diagnosis and disease phase is checked; disease phase is blanked and a WARNING is sent back if the combination is invalid (see table 1 on page 8).

- Default matching preferences are used if no matching preferences are provided with the PAT_UPD:
  P_MATCH_AB = 0:XX:40:2020XXXXXX/
  P_MATCH_DR = 0:XX:60:2020XX20XX/
  P_MATCH_CB = 0:XX:62:2222XX22XX/ i.e. we routinely exclude antigen mismatches for HLA-A, -B and -DR(B1) but no allelic mismatches for donors but accept up to two antigen mismatches for cord blood units.

- AB matching preferences with antigen mismatches switched on are set to default AB matching preferences.

Table 1: Valid combinations of [P_DIAG] and disease phase [P_DIS_PHA].

diagnosis	phase	diagnosis	phase	diagnosis	phase
ALL	AD	HIS	NA	NHL	Cn
ALL	Cn	HL	Cn	NHL	PF
ALL	PF	HL	PF	NHL	Pn
ALL	Pn	HL	Pn	NHL	Rn
ALL	PI	HL	Rn	OL	Cn
ALL	Rn	IEA	NA	OL	Pn
AML	AD	IIS	NA	OL	RD
AML	Cn	IMD	NA	OL	SD
AML	PF	IPA	NA	OM	None
AML	Pn	MDS	AD	OND	NA
AML	PI	MDS	Cn	PCD	AD
AML	Rn	MDS	PF	PCD	Cn
CML	AP	MDS	Pn	PCD	PF
CML	BC	MDS	PI	PCD	Pn
CML	Nn	MDS	Rn	SAA	NA

2.1.2 Activation

Searches performed electronically via EMDIS must be set to active before requests can be accepted. For patients with EMDIS-activation, automatic repeat searches are performed every night.

All non-EMDIS searches are automatically activated when the first request is made on behalf of a patient. New match lists are provided upon request.

Technical information

Incoming patient status change [PAT_STAT]

- A search coordinator from ZKRD is informed if the patient age is above 69 years or diagnosis is one of OM or OL upon activation of the patient.
- The ZKRD database is checked for duplicate patient records at activation.

Inquiries might occur.

2.1.3 Cancellation

There is no need to cancel a search that has never become active. For activated searches, ZKRD expects a formal cancellation of the donor search. This is usually performed when a suitable donor has been identified and/or the patient proceeds to transplant, when the patient is no longer interested in or eligible for a transplant or when the requesting center loses contact with the patient. Furthermore, ZKRD suggests that a search can be cancelled after three months of no activity for a patient. The cancellation of a search can be informal, but must be in writing.

Technical information/EMDIS

Incoming patient status change [PAT_STAT]

- No special information

2.2 Donor-Related Information

Technical information/EMDIS

Manually Requested Donors / Mismatched Donors

- ZKRD also provides donors to EMDIS on request (e.g. a particular mismatched donor) which have been selected from our printed lists of mismatched donors compiled according to user defined criteria.
- Requests are allowed on mismatched donors but a WARNING will be issued.

All incoming Requests [*_REQ]

- The reference code must be unique within the sending hub over all requests.
- If the requested donor was not reported for that patient or does not match any more according to ZKRD matching criteria a WARNING is sent.

All incoming results [*_RES]

- Multiple identical results are rejected.
- Multiple different results are treated as updates/corrections.

2.2.1 Search Reports

The ZKRD provides search reports in a uniform layout where the sorting and selection criteria may be tailored to the needs of a particular patient. This is based on the ZKRD OptiMatch® program which takes into account

a) the loci HLA-A, -B, -C, -DRB1, -DQB1,

b) molecular and serological assignments of patients and donors for these loci

when selecting donors to be considered for search reports.

Then the program considers

c) the probability of matching/mismatching calculated on the basis of five locus haplotype frequencies for HLA-A∼C∼B∼DRB1∼DQB1 as well as

d) the donor's age

to determine the order in which donors are presented.

Three separate search reports can be generated:

- donors typed for HLA-A and -B only
- donors typed for HLA-A, -B and -DRB1
- cord blood units

Afterwards, the appearance of the search reports depends largely on a substantial number of user-controlled parameters (filter criteria).

For non-EMDIS searches the number of donors shown on search reports and other parameters are set to defaults and mismatched donors are included in the lists when fewer than ten matched donors are found.

All parameters used to compile a match list can be changed by using EMDIS matching preferences for EMDIS patients or by sending a request to our search coordinators.

Cord Blood Unit (CBU) search reports, by default, allow up to two differences for HLA-A, -B (antigen level) and -DRB1 (allele level) and are available upon request.

Technical information/EMDIS

Outgoing search report [DONOR_CB]

- The pool information (DON_POOL) for national donors is set to ZKRD's ION (6939).

- The donor attribute (DON_ATTR) contains for each donor the three character abbreviation of the German donor centers.

Incoming search report [DONOR_CB]

- Donors/CBUs without a pool information (DON_POOL) are rejected.
- Donors/CBUs with an unknown combination of sending EMDIS node (HUB_SND/REG_SND) and donor pool are rejected.
- WARNING if search is stopped or suspended more than seven days.
- A donor (DON_TYPE = "D") must be at least 17 years old. Violating new donors are rejected, for known donors a WARNING is issued.
- WARNING for donors who are older than 80 years and for cords that are "born" before 1990.
- WARNING for donors whose CMV status is reported as negative but the CMV date is missing.
- WARNING if donor weight less than 40 kg or more than 199 kg.
- WARNING if donor height less than 100 cm or more than 250 cm.
- All errors are downgraded to WARNINGs if donor is to be deleted.

Incoming summary of match run [MATCH_SUM]

- Nothing special.

Incoming phenotype list [PHEN_LIST]

- Nothing special.

2.2.2 HLA-Typing

All HLA testing is performed by molecular methods. If any typing is requested on a donor who has not yet been typed for HLA-DRB1, at least a low resolution HLA-DRB1 typing must be requested as part of the typing request.

- **Low resolution** means the identification of the allele group i.e. the first field of the HLA nomenclature.
- **High resolution** typically results in DNA allele designations of at least the first two fields of the HLA nomenclature. Multiple allele codes, G- and P-groups may be used if all the alleles covered are identical over all of exons 2 and 3 for HLA class I or over all of exon 2 for HLA class II.

The loci and resolutions available can be found in table 2.

Table 2: Available loci and resolutions for HLA typing requests
(- = unavailable, x = available)

locus	low	high
A	-	x
B	-	x
C	-	x
DRB1	x	x
DRB3	-	x
DRB4	-	x
DRB5	-	x
DQB1	-	x
DQA1	-	x
DPB1	-	x
DPA1	-	x

Technical information/EMDIS

Incoming typing requests [TYP_REQ]

- Requests for typing resolutions not listed in table 2 will be upgraded to high resolution except for HLA-DR serology which will be replaced by HLA-DRB1 low resolution DNA typing.
- Requests to repeat the typing of already available data are not permitted.
- Multiple overlapping requests at the same time are not allowed.

Incoming typing Results [TYP_RES]

- Partial results are rejected.

2.2.3 Test for Infectious Disease Markers and Blood Group

The screening for infectious disease markers (IDM) comprises HBs-Ag, Anti-HBc, Anti-HCV, Anti-HIV-1/2, Anti-Treponema pallidum, Anti-CMV and also includes the testing of the AB0 blood group and Rhesus factor.

If only a subset of the IDM screening tests is requested, the complete screening will be performed and invoiced. Testing for CMV antibody, EBV antibody or AB0 blood group with Rhesus factor, as well as for CCR5, may be requested individually.

Technical information/EMDIS

Incoming IDM requests [IDM_REQ]

- Only tests as described in 2.2.3 are allowed.
- If other tests are selected the complete request is rejected.

- If only a subset of the IDM screening tests is requested, the request will automatically be upgraded to the complete set of allowed tests ([1100101011100] and a WARNING is issued.
- CCR5 testing must be requested via fax or email.

IDM results [IDM_RES]

- Incoming partial results are rejected.
- After SMP_REQ: IDM screening according to 2.2.3 (corresponding to bits 1,2,5,7,9,10,11 [1100101011100]) is routinely provided.
- CCR5 results are reported via fax.

2.2.4 CT Sample Procurement

The patient must be registered in the ZKRD database with high resolution data for HLA-A, -B, -C, -DRB1 and -DQB1 at the time of CT request. The total quantity of blood requested for confirmatory typing must not exceed 50 ml per donor. Please see Chapter 3 of the German Standards for further specifications.

We cannot guarantee that blood samples will be provided exactly as requested. This may apply to the number and volume of tubes and, in some cases, to variations concerning the anticoagulant. Such deviations are due to the unavailability of certain sizes and types of tubes uncommon in Germany at some donor centers. The procurement of a blood sample always includes IDM screening (see 2.2.3).

Whenever possible, an advance notice is sent at least two days prior to sample arrival. The donor center is responsible for entering sample arrival and labeling data. Therefore, the format of the donor ID may vary slightly on the label.

CT sample procurement for CBUs varies and depends on numerous factors. Material can be from a frozen DNA sample or an attached segment. The sample can be shipped to the requesting laboratory or tested at the cord blood bank.

All samples must be tested for HLA-A, -B, -C, -DRB1 and -DQB1 at high resolution. We expect to receive all test results obtained from samples provided (donor or CBU) in due course, which should be within four weeks of sample arrival. Unless a reservation of the donor or unit is explicitly requested with the transmission of the CT result, the donor/unit will be released. If results are transmitted when a donor/unit is already released, reservation must be requested separately indicating a reason. Once a month, reminders regarding outstanding CT results are sent to the respective registry/TC by fax. The ZKRD should be informed about samples delivered with substantial delay or damage.

If all or a part of the blood samples provided are to be used or stored for research purposes, we must obtain informed consent from the donor. Please provide details

of the study with the request. Non-standard testing (such as CCR5, KIR, etc.) may require additional consent, therefore, the ZKRD should be contacted upfront.

Technical information/EMDIS

Incoming sample requests [SMP_REQ]

- The total quantity of blood samples requested must not exceed 50 ml per request.
- Values for number of tubes must be between 1 and 9.
- The first date of sample reception must not be more than seven days in the past at processing of the request.
- The first date of sample reception must not be more than 30 days in the future at processing of the request.
- The interval between first and second date of sample reception must not be more than 35 days.
- The requested donor must have an HLA-DRB1 typing.
- INST_SMP_SENT must be a laboratory address registered at ZKRD (via EMDIS NEW_ADD message).

Incoming sample arrival information [SMP_ARR]

- The sample arrival date must not be more than 30 days in the future.
- Arrival dates more than 7 days in the past are not forwarded to the search units.

Incoming sample result [SMP_RES]

- The result must either contain at least one HLA value or release the donor and give an explanation in the remark field.
- If a SMP_RES cannot be sent a NO_RES is expected.
- If a SMP_REQ is cancelled after the arrival of the sample and the courier has invoiced the transport at ZKRD a NO_RES has to be sent to close the request. Without the NO_RES the request will continue to be shown on the list of open requests (EMDIS message RES_REM).

2.2.5 Cancellation and Expiration of Requests

Requests for HLA typing and IDM testing are valid eight weeks. Requests for sample shipment (blood and DNA) are valid for six weeks. If the donor center is not able to complete the request within this time frame, the request is closed automatically and must be re-requested if still desired.

A request may be cancelled at any time. If processing cannot be stopped with any reasonable effort, an invoice will still be issued and must be paid. This is typically assumed if a typing or IDM result can be delivered within 14 days after cancellation. Search cancellation automatically cancels all pending requests except work-up.

Technical information/EMDIS

Incoming request cancellation [REQ_CAN]

- Nothing special.

2.2.6 Reservation of a Donor

Donors are automatically reserved for the time of the request's validity (see 2.2.5). After the transmission of the test result the donor is automatically reserved for a patient for 14 days. If no further request arrives in this time the donor will be released. Donors showing an HLA-DRB1 mismatch after low resolution HLA-DRB1 typing are released immediately.

After dispatching a blood (DNA) sample, the donor is automatically reserved for 60 days. After that time, the donor will be released automatically unless a reservation request is transmitted together with the report of confirmatory typing results.

The maximum reservation period is three months. Requests for extensions of this period shall include a justifiable reason.

Technical information/EMDIS

Implicit reservation of a donor after request / expiration of requests

- Typing request: 8 weeks
- IDM request: 8 weeks
- Sample request: 6 weeks
- After cancellation: 2 weeks

Results modify the implicit reservation period:

- Typing result: result data + 2 weeks. Exception: for DRB1 low results if the donor is at least DR broad identical
- Sample arrival: A donor is implicitly reserved for a patient for 60 days after blood shipment – the sample result allows to release the donor or have it reserved for three month from result date.

Incoming explicit donor reservation request [RSV_REQ]

- An explicit donor reservation request is basically only accepted with sample result. There may be exceptions but they should be rare and accompanied by a compelling argument. The maximum reservation period is 180 days and the donor must be available.

3 Work-Up

3.1 Requirements

Work-ups shall be submitted using the applicable ZKRD forms (available in the protected area of the ZKRD website at
`https://partner.zkrd.de/en/contents/22`)
or any other WMDA compliant forms. Eligible registries and centers (see 2.1.1) can obtain a password for the protected area of the ZKRD website.

The requesting registry/TC must have submitted confirmatory typing results at least for the loci HLA-A, -B, -C, -DRB1 and -DQB1 demonstrating at least a 9/10 match at high resolution level. Lower than 9/10 high resolution matches are subject to review.

In the rare case of a very urgent work-up, CT and work-up may be requested concurrently (see German Standards), but a high resolution CT result must be submitted before donor clearance can be issued. Such requests must be clearly identified as parallel CT and work-up. If such a CT request is submitted via EMDIS, it has to be designated as parallel CT and work-up request in the remark field.

Requests on behalf of patients older than 70 years and/or with non-standard diagnoses are subject to review by the medical directors of the ZKRD and the donor center concerned.

If patient registration and donor testing requests have been processed automatically via EMDIS, patient eligibility may not have been subject to review until the work-up stage.

Consult the German Standards for more details concerning donor work-up, product transport and subsequent donation requests.

Technical information/EMDIS

Incoming workup requests [WOR_REQ]

- WOR_REQ message via EMDIS is not sufficient to start a work-up. The information is only printed. In addition the applicable ZKRD forms or other WMDA compliant forms shall be submitted.

- Combinations of diagnosis and disease phase must comply with table 1 on page 8.

Incoming work-up Status information [MARR_STAT]

- Nothing special.

3.2 International Transport

For international transports the applicable ZKRD forms (available in the protected area of the ZKRD website) or any other WMDA compliant forms shall be submitted. Consult Chapter 7 of the German Standards for more details.

4 Post-Transplant

4.1 Follow-Up

Donor follow-up after stem cell donation is the responsibility of the donor centers and has to be performed according to German Standards.

Patient follow-up is the responsibility of the transplant centers and has to be performed according to national and applicable international standards.

In order to be able to support our centers appropriately we expect to receive upon request information about the recipient's condition three months and one year post transplant for international patients and additionally after two and five years for German patients (for German patients see German Standards Chapter 9).

4.2 Donor-Recipient Contact

Anonymous patient-donor contact is permitted after the transplantation. Generally, personal contact is possible beginning two years after the transplant if the patient and the donor agree and sign a declaration of consent to release personal information. For more details see Chapter 9 of the German Standards.

5 Hosting of International Donors and Patients

To support Donor Centers, Search Units, Transplant Centers and Registries outside Germany, ZKRD is offering them access to its IT infrastructure. We expect those international cooperation partners to adhere to WMDA standards as far as possible given their local circumstances. These partners are not subject to a regular review process similar to the one implemented for our national partners.

5.1 Hosting of International Donors

Currently donors from organizations in several European countries (see table 3) are hosted. ZKRD's national donors and those of each of the international cooperation partners are treated as a separate "donor pool".

Table 3: Hosted donor centers

ID	Donor center	ION
AT-GFL	Verein Geben für Leben, Austria	4961
GB-DKM	Delete Blood Cancer, United Kingdom	9968
LU-MDP	Luxembourg Marrow Donor Program, Luxembourg	3099
PL-DKM	Fundacja DKMS Polska, Poland	7414

Separate match lists can be provided on-screen, as a pdf or on paper for each of those pools, as well as an integrated match list of the consolidated donor pool. Services can be requested from those separate donor pools in much the same way as from German donors. Although partners are encouraged to adhere to our general practices, prices and conditions for hosted donors may vary. Please check our current price lists for details.

Technical information/EMDIS

- Donor Identifications are formed according to the same pattern as the German donor IDs, which is country code (2 letter ISO code), donor center ID (3 alpha characters) followed by up to 9 digits issued by the international donor center.
- On our own match lists the three fields of the donor IDs are separated by dashes.
- For technical reasons, donor IDs must currently be prefixed with "DE" for transmission via EMDIS and the dash between the country code and the donor center

ID can not longer be part of the EMDIS IDs, i.e. "XY-DON-123456789" becomes "DEXYDON-123456789". How the donor IDs are shown in the systems of an EMDIS partner depends on the receiving system.

- The donor attribute (DON_ATTR) is empty for all hosted international donors.
- The donor pool (DON_POOL) contains the corresponding ION (see table 3) for all hosted international donors.

5.2 Search Services for International Patients

Occasionally searches are performed for patients abroad who are considered for transplants in Germany or another country. In such cases, the ZKRD always guarantees the payment of every requested and duly performed service in the same way as for German patients.

Technical information/EMDIS

- Nothing special.

6 EMDIS Connection of ZKRD

6.1 Basics

- **Hub code:** DE
- **Email (for FML messages only):** emdis-auto(at)zkrd.de
- **Email (administrator):** emdisadm(at)zkrd.de
- **Fingerprint of PGP key:** 5DD3 235A DFCB 6779 C066 DC05 1CD1 A830 8968 993B (4096 bit / RSA)
- **Public PGP key:** Available in the protected area of the WMDA Share website

6.2 Implementation

- **Platform:** SuSE Linux Enterprise Server, Informix Dynamic Server
- **ECS:** perlECS
- **FML:** Parser employed: Lex/Yacc
- **Matching:**

  The ZKRD matching program OptiMatch® provides separate lists for A-B-typed and A-B-DRB1-typed donors and cord blood units. The number of donors reported and the criteria applied to selection and sorting are highly controllable. Specific haplotype frequency sets for patient and donors are taken into account when selecting donors. All EMDIS matching preferences defined so far are interpreted correctly. The numerous extra features can be activated by contacting our search coordinators for individual patients. Repeat searches reporting new or better matching donors are usually run every night for searches with recent activity and at least once a week for all active searches.

- **Donor ID format:**

  The format for German donor IDs which the ZKRD recommends to use in all instances is:
  DE-{3 character donor center}-{up to 10 digits}, e.g. DE-ABC-123456789.

However, due to technical and historical reasons, other donor ID formats are still in use.

For EMDIS those are:
DE{3character donor center}-{up to 10 digits}, e.g. DEABC-1234567890 and a right justified format of length 17 padded with dots, e.g. DEABC...123456789.

Over the course of the years 2018 to 2020, the new donor ID format GRID (Global Registration Identifier for Donors) will be implemented. Adjusted to the WMDA standard of GRID (`https://www.iccbba.org/tech-library/databases-reference-tables/grid-issuing-organizations`) the GRIDs of German donors consist of following elements shown in table 4.

Table 4: Elements of GRID

Position	Admissible Characters	Specification and Description
1-4	digits from 0-9	Issuing Organization Number
5-17	5-7 characters from A-Z; 8-17 digits from 0-9	Registration Donor Identifier
18-19	digits from 0-9	Checksum

6.3 Level of Implementation

The level of implementation for the different message types is shown in table 5.

Table 5: Implementation level and special features for EMDIS messages at ZKRD

	incoming	outgoing
PAT_UPD	fully implemented	fully implemented
ALM_REQ	fully implemented	fully implemented
ALM_RES	fully implemented	fully implemented
PAT_STAT	fully implemented	fully implemented
CBR_REQ	fully implemented	fully implemented
DONOR_CB	fully implemented	fully implemented
CBU_FULL	fully implemented	fully implemented
CBU_DIFF	fully implemented	fully implemented
PHEN_LIST	fully implemented	fully implemented
MATCH_SUM	fully implemented	fully implemented
TYP_REQ	fully implemented	fully implemented
TYP_RES	fully implemented	fully implemented
SMP_REQ	fully implemented	fully implemented
SMP_INFO	fully implemented	fully implemented
SMP_ARR	fully implemented	fully implemented
SMP_RES	fully implemented	fully implemented
IDM_REQ	fully implemented	fully implemented
IDM_RES	fully implemented	fully implemented
RSV_REQ	printed	not implemented
RSV_RES	info to local admin	not implemented
RSV_NOT	fully implemented	fully implemented
REQ_CAN	fully implemented	fully implemented
NO_RES	fully implemented	fully implemented
RES_REM	fully implemented	fully implemented
WOR_REQ	inserted into local database and printed, no further processing	not implemented
MARR_STAT	printed	not implemented
NEW_ADD	fully implemented	fully implemented
MSG_ACK	fully implemented	fully implemented
MSG_DEN	fully implemented plus info to local admin	fully implemented plus daily reports faxed
WARNING	fully implemented plus info to local admin	fully implemented
TXT_MSG	fully implemented	not implemented
ADMIN	fully implemented	manually

6.4 Special Features

- Text report with cumulated MSG_DENs of the previous day by email (default) or fax in the evening.
- Weekly list of open requests by fax and monthly via EMDIS for EMDIS hubs [RES_REM].

7 Finance

7.1 Schedules of Fees

The current Schedule of Fees can be found at
`https://partner.zkrd.de/en/content/detail/8`
Please note the pricing of combined typing requests is the sum of the individual prices from the price list minus 88 EUR for each additional typing in the same request.

7.2 General Terms

1. A Preliminary search and activation of the search process are free of charge.
2. ZKRD does not guarantee the correctness of any data provided on which the decision for a later request may be based. Thus, if any of the HLA-alleles of a donor are found to be different from its prior value, the fee for any service requested und performed up to that point must still be paid.
3. HLA-DRB1 typing does not include the testing of HLA-DRB3/4/5 alleles. If desired HLA-DRB3/4/5 testing must be explicitly ordered. Note that testing of HLA-DRB3/4/5 may be charged even if no such allele could be identified. The requesting institution should be aware of the linkage between HLA-DRB1 und -DRB3/4/5.
4. Donor HLA testing is performed by molecular methods. Definition of resolution levels can be found in 2.2.2.
5. The prices for all services (HLA-typing, blood group serology or infectious disease markers) procured by ZKRD are comprehensive. Unless specifically requested, HLA-typing does not include screening for infectious disease markers.
6. The price for the confirmatory typing sample includes testing for infectious disease markers. If testing of the above mentioned markers is requested separately, e.g. prior to a CT sample request, this service is charged separately.
7. Fees for typing and providing blood samples will also be charged in cases where previous typing results could not be confirmed.
8. When providing blood samples, ZKRD expects to receive the results of the confirmatory typing and an explicit statement if the donor is to be reserved within four weeks.

9. Unless explicitly stated otherwise in the pricelist, any transport related costs are not included.

10. The costs for the transportation service at the stage of CT blood sample as well as for products (onboard transport) vary. For both cases, flat rates are offered for major destinations.

11. The procurement fee for marrow or peripheral stem cells does not include the courier costs, a separately shipped pre-collection and/or IDM sample or repeat donor infectious disease testing at work-up. Provision of the courier by the transplant center is encouraged.

7.3 Cancellation

A fee can be charged if a registry or transplant center cancels a work-up request. Exceptions may apply if the donor center issues the cancellation. This fee can also be charged in addition to postponement fees.

1. **Bone Marrow or PBSC:** Should the actual costs accrued exceed the cancellation fee listed in the price list, real costs will be charged. After start of donor mobilization additional costs may be incurred (e.g. G-CSF injections per donor).

2. **Cord Blood:** Cancellation of work-up before shipment is invoiced according to services rendered (there may be additional costs for cancellation of flights, etc.) ranging from characteristics already transmitted in the CBU report up to the full price of the unit. The full price may be charged for recovery of costs due to potential loss of CBU resulting from the depletion of samples, etc.

7.4 Terms of Payment

1. The total amount is due within 30 days.

2. Payment must be made by money order or a bank draft direct to our business bank, expressed in EURO, for the full amount invoiced free of bank charges, drawn to the corresponding business bank, payee ZKRD.

3. Our invoice numbers should be noted on the document.

4. For payments including a larger number of separate invoices, a notice of payment should be provided beforehand indicating all invoice numbers and respective amounts to be balanced.

7.5 Accounts Payable

For the processing of invoices the following points should be observed:

1. Invoices should be available at the ZKRD within 60 days after service provision.

2. Patient ID, donor ID, service type and amount by service line must be stated on the invoice.

3. Requests are still paid after cancellation if the requested result is submitted to the ZKRD within 30 days and the invoice within 60 days of the cancellation date.

4. Invoices can only be accepted for services which were completely fulfilled as requested. Partial results are not accepted and thus cannot be paid for.

5. For invoices regarding the shipment of CT blood samples and including the testing of infectious disease markers, the IDM results must be available by the date of the invoice.

6. Requests for services for German patients expire after 90 days, i.e. they should be fulfilled within that period. Requests which are fulfilled after that period are considered expired and cannot be paid for.

7. Services are paid according to the international partner's valid price list, which must be available at the ZKRD and/or the BMDW at the time of invoicing.

A Appendix: Changes from last version

- Minor corrections.
- 1.1 Updated website link.
- 1.3 Updated phone numbers.
- 2.2.4 Added information regarding values for number of tubes.
- 6.2 Added information about implementation of GRID.