

Antimicrobial prophylaxis in Paediatric transplantation

Fields marked with * are mandatory.



European Reference Network

for rare or low prevalence complex diseases

Network
Transplantation in Children
(ERN TRANSPLANT-CHILD)



Funded by the European Union,
by the project GA-101085639

Antimicrobial prophylaxis in Paediatric transplantation

Infectious complications are a major concern for children undergoing solid organ and hematopoietic stem cell transplantation (**SOT & HSCT**), representing a leading cause of morbidity and mortality. Antimicrobial prophylaxis is a preventive strategy, however, recent evidence questioned the effect on the risk of mortality, emergence of multidrug resistance germs, and bloodstream infections (BSI) thus challenging its role.

The **main objective** of this survey is to investigate the antimicrobial prophylaxis practices according to ERN-TransplantChild members. In particular, to investigate antibiotic choices and duration and differences between previous colonization, underlying diseases, and the sensitivity profiles of the isolated bacteria in pre-transplant.

The purpose of this survey, like that of the rest of the clinical audits promoted by the **TransplantChild Clinical Audits Working Group**, seeks to identify the clinical reality of the centres and transplantation programs included in the ERN on this topic.

Please, share this survey with your colleagues who may be interested in answering it.

Thank you for your valuable input. If you have any concerns or questions about this survey, please contact us ([HelpDesk](#) or [Medical Advisor](#)).

* Please, insert a valid email:

*** Institution:**

- AUSTRIA - Centre for Pediatric Lung Transplantation, Medical University of Vienna
- BELGIUM - Princess Elisabeth Children's Hospital, Gent
- BELGIUM - University Hospital Saint-Luc, Brussels
- CROATIA - University Hospital Centre Zagreb
- DENMARK - Odense University Hospital
- DENMARK - Rigshospitalet University Hospital, Copenhagen
- ESTONIA - Tartu University Hospital
- FINLAND - HUS Helsinki University Hospital
- FRANCE - Hôpital Bicêtre - Hôpitaux de Paris
- FRANCE - Hôpital Necker Enfants Malades - Hôpitaux de Paris
- GERMANY - Medizinische Hochschule Hannover
- GERMANY - University Medical Center Hamburg-Eppendorf (UKE), Hamburg
- HUNGARY - Semmelweis University, Budapest
- IRELAND - Children's Health Ireland (CHI)
- ITALY - AOU Città della Salute e della Scienza di Torino
- ITALY - Azienda Ospedaliera di Padova
- ITALY - ISMETT Istituto Mediterraneo per i Trapianti e Terapie ad Alta Specializzazione, Palermo
- ITALY - Ospedale Papa Giovanni XXIII, Bergamo
- ITALY - Ospedale Pediatrico Bambino Gesù, Rome
- LATVIA - Children's Clinical University Hospital, Riga
- LITHUANIA - Vilnius University Hospital Santaros Klinikos
- LUXEMBOURG - Centre Hospitalier du Luxembourg
- MALTA - Mater Dei Hospital, Malta
- NORWAY - Oslo University Hospital
- Other
- POLAND - Children's Memorial Health Institute, Warsaw
- PORTUGAL - Centro Hospitalar de Lisboa Norte
- PORTUGAL - Centro Hospitalar do Porto
- PORTUGAL - Centro Hospitalar e Universitário de Coimbra
- SPAIN - Hospital Infantil Universitario Niño Jesús, Madrid
- SPAIN - Hospital Sant Joan de Déu, Barcelona
- SPAIN - Hospital Universitario Gregorio Marañón, Madrid
- SPAIN - Hospital Universitario La Paz, Madrid
- SPAIN - Hospital Universitario Virgen del Rocío, Sevilla
- SPAIN - Hospital Universitari Vall d'Hebron, Barcelona
- SWEDEN - Karolinska University Hospital
- SWEDEN - Sahlgrenska Universitetssjukhuset, Göteborg
- SWEDEN - Skåne University Hospital, Lund
- THE NETHERLANDS - Erasmus UMC Rotterdam
- THE NETHERLANDS - UMC Amsterdam
- THE NETHERLANDS - UMC Utrecht
- UK - King's College Hospital NHS Foundation Trust, London

Please, specify other institution name:

Data protection policy

Please, download and read the data protection policy:

[TransplantChild_survey_data_protection_policy.pdf](#)

I accept your Terms

*** Which transplantation program is your unit dedicated to?**

- Hematopoietic stem cell
- Heart
- Kidney
- Intestinal
- Lung
- Liver

*** Choose your profile:**

- Paediatric surgeon
- Paediatric infectious diseases
- Paediatrician in charge of SOT recipients
- Paediatrician performing HSCT
- Others

Please, specify other profile:

*** How many children with SOT/HSCT are being followed in your Department?**

- < 25
- 26 - 50
- 51 - 75
- 76 - 100
- > 100

*** How many years have you been working in pediatric transplantation?**

- < 5 years
- 6 - 10 years
- 11 - 15 years
- > 15 years

*** Is an official antimicrobial prophylaxis protocol for pediatric transplant patients available in your hospital?**

- Yes, for both SOT & HSCT
- Yes, only for SOT

- Yes, only for HSCT
- No
- Other

Please describe other answer:

*** Who is in charge of antibiotic prophylaxis management?**

- Paediatrician
- Surgeon
- Infectologist
- Intensivist
- Other

If other answer, please describe:

*** Is there an Antimicrobial stewardship program (ASP) in your hospital?**

- No
- Yes
- Yes, but it is not working on Paediatric transplantation

*** What is the post-transplant recipient location?**

- Cardiothoracic / Surgical PICU
- PICU
- Transplant PICU
- Ward
- Other

If other location, please describe:

*** Do you usually perform a systematic screening with microbial tests for patients in your pre-transplantation assessment? (the answer could be multiple):**

- Never
- Rectal swab
- Nasal swab
- Tuberculosis blood test (Interferon- γ release assays testing, IGRA)
- Other

Please describe other screening test:

* Do you receive periodic reports about the prevalence of MDR organisms in your hospital?

- Yes
- No
- Other

* If **YES**, which is the MRSA prevalence?

- 0-10%
- 11-20%
- 21-30%
- >30%

* If **YES**, which is the ESBL prevalence?

- 0-10%
- 11-20%
- 21-30%
- >30%

* If **YES**, which is the carbapenem-resistant gram-negative bacteria prevalence?

- 0-10%
- 11-20%
- 21-30%
- >30%

If other answer, please describe:

* Do you have an antimicrobial/antifungal protocol for prophylaxis?

- Yes
- No

Would you mind transferring the protocol to this address coordination@transplantchild.eu or upload your file(s)?

SOT

The patient has **NO COLONIZATION.**

* Which **PERIOPERATIVE** antimicrobial prophylaxis would you provide during the transplant surgery?

- No prophylaxis
- Amoxicillin/ampicillin
- amoxicillin + clavulanic acid
- First-generation cephalosporin (e.g. cefazolin)
- Second-generation cephalosporin (e.g. cefuroxime)
- Third-generation cephalosporins (e.g. cefotaxime or ceftriaxone)
- Antipseudomonal third-generation cephalosporins (e.g. ceftazidime)
- Fourth-generation cephalosporins (e.g. cefepime)
- Fifth-generation cephalosporins (e.g. ceftaroline)
- Piperacillin + tazobactam
- Co-trimoxazole
- Carbapenems
- Antibiotics with activity against MRSA pathogens: vancomycin
- Antibiotics with activity against MRSA pathogens: linezolid
- Antibiotics with activity against MRSA pathogens: teicoplanin
- Fluoroquinolone: ciprofloxacin/levofloxacin
- Aminoglycoside: amikacin
- Aminoglycoside: tobramycin
- Aminoglycoside: gentamycin
- Colistin
- Other

If other perioperative antimicrobial prophylaxis, please describe:

* The transplantation was successfully performed, and the recipient was transferred to the intensive care unit. **Which POSTOPERATIVE antimicrobial prophylaxis would you provide during the postoperative period for this patient?**

- No prophylaxis
- Amoxicillin/ampicillin
- amoxicillin + clavulanic acid
- First-generation cephalosporin (e.g. cefazolin)
- Second-generation cephalosporin (e.g. cefuroxime)
- Third-generation cephalosporins (e.g. cefotaxime or ceftriaxone)
- Antipseudomonal third-generation cephalosporins (e.g. ceftazidime)
- Fourth-generation cephalosporins (e.g. cefepime)
- Fifth-generation cephalosporins (e.g. ceftaroline)
- Piperacillin + tazobactam
- Co-trimoxazole
- Carbapenems
- Antibiotics with activity against MRSA pathogens: vancomycin
- Antibiotics with activity against MRSA pathogens: linezolid
- Antibiotics with activity against MRSA pathogens: teicoplanin
- Fluoroquinolone: ciprofloxacin/levofloxacin
- Aminoglycoside: amikacin

- Aminoglycoside: tobramycin
- Aminoglycoside: gentamycin
- Colistin
- Other

If other postoperative antimicrobial prophylaxis, please describe:

* **What is the DURATION of postoperative antimicrobial prophylaxis?**

- 24 h
- 2-7 days
- 8-14 days
- 15-21 days
- 22-28 days
- Until indwelling drainages are removed or the patient has been extubated
- Until PICU discharge
- Other

Please describe other duration:

* **Do you adapt your antibiotic prophylaxis according to the results of the donor samples?**

- Yes
- No

* If on day five following transplantation, bacteriological samples issued from the donor and the recipient are sterile. The patient has no signs of infection. **Would you stop antibiotic prophylaxis (if still prescribed)?**

- Yes
- No

The patient has **KNOWN COLONIZATION** by MDR bacteria (e.g. MRSA or ESBL or carbapenem-resistant gram-negative bacteria).

* **Do you consider this colonization as a contraindication for transplantation?**

- No
- Yes, absolute contraindication
- Yes, only for MRSA
- Yes, only for ESBL
- Yes, only for carbapenem-resistant gram-negative bacteria
- Other

If other, please describe:

* **Do you perform in this patient pre-transplant decolonization strategy?** *(the answer could be multiple)*

- No
- Yes, only for MRSA
- Yes, only for EBSL
- Yes, only for carbapenem-resistant gram-negative bacteria
- Other

If other decolonization strategy, please describe:

If **YES** or other, please select the type of therapy:

- Parenteral antibiotic therapy
- Aerosol antibiotic therapy
- Oral antibiotic decolonization (e.g gentamicin or vancomycin)
- Topical decolonization
- Fecal microbiota for transplantation
- Other

Please describe other type of therapy:

If **YES**, for how long?

- 7 days
- 8-14 days
- 15-21 days
- Until the first negative microbiological sample
- Other

Please describe other duration:

* **Would you change your IV PERIOPERATIVE antimicrobial prophylaxis according to the colonizing bacteria sensitivity?**

- Yes
- No

* **What is the DURATION of postoperative antimicrobial prophylaxis in a colonized patient?**

- No prophylaxis

- 24h
- 2-7 days
- 8-14 days
- 15-21 days
- 22-28 days
- Until indwelling drainages are removed or the patient has been extubated
- Until PICU discharge
- Other

If other, please describe:

* Do you recommend **antifungal PERIOPERATIVE prophylaxis**?

- Always
- Never
- Only in selected cases
- Other

Please describe the selected cases:

Please describe other answer:

Which antifungal prophylaxis would you prescribe? (*the answer could be multiple*):

- Echinocandins
- Voriconazole
- Fluconazole
- Posaconazole
- Isavuconazole
- Liposomal Amphotericin B
- Other

What is the **DURATION** of antifungal prophylaxis?

- 24 hours
- 2 – 7 days
- 8 - 14 days
- 15 - 21 days
- 22- 28 days
- Until indwelling drainages are removed or the patient has been extubated
- Until PICU discharge

Other

* In the case of positive Interferon- γ release assays for tuberculosis before transplantation, **do you treat this latent tuberculosis without previous and appropriate treatment?**

- No
- Yes, before transplantation
- Yes, after transplantation
- Yes, before AND after transplantation
- Other

Please describe other answer:

If **YES**, please specify duration and number of drugs used:

Thank you for your time!



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HSCT

* **Do you have different antimicrobial/antifungal prophylaxis strategies according to the type of HSCT (allogeneic or autologous)?**

- Yes
- No

Do you recommend **ANTIBIOTIC** prophylaxis in **allogeneic** HSCT?

- Always
- Never
- In only selected cases
- Other

Please describe the selected cases:

Please describe other answer:

Which **ANTIMICROBIAL** prophylaxis do you prescribe in **allo-HSCT**? *(the answer could be multiple):*

- Amoxicillin/ampicillin
- Amoxicillin + clavulanic acid
- First-generation cephalosporin (e.g. cefazolin)
- Second-generation cephalosporin (e.g. cefuroxime)
- Third-generation cephalosporins (e.g. cefotaxime or ceftriaxone)
- Antipseudomonal third-generation cephalosporins (e.g. ceftazidime)
- Fourth-generation cephalosporins (e.g. cefepime)
- Fifth-generation cephalosporins (e.g. ceftaroline)
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- Antibiotics with activity against MRSA pathogens: linezolid
- Antibiotics with activity against MRSA pathogens: teicoplanin
- Fluoroquinolone: ciprofloxacin
- Fluoroquinolone: levofloxacin
- Aminoglycoside: amikacin
- Aminoglycoside: tobramycin
- Aminoglycoside: gentamycin
- Colistin
- Other

Other type of antimicrobial:

What is the **DURATION** of the antimicrobial prophylaxis in **allo-HSCT**?

- Until engraftment (Absolute neutrophil count $5 \times 10^9/L$)
- Until day +100 post-HSCT
- Until discontinuation of immunosuppressive therapy
- If present, as long as the child is being treated for GvHD
- Other

Please describe other duration:

Do you recommend **ANTIFUNGAL** prophylaxis in **allogeneic** HSTC?

- Always
- Never
- In only selected cases

Other

Please describe selected cases:

Describe other answer:

Which **antifungal** prophylaxis would you prescribe in **allo-HSCT**? *(the answer could be multiple):*

- Echinocandins
- Voriconazole
- Fluconazole
- Posaconazole
- Isavuconazole
- Liposomal Amphotericin B
- Other

Describe other antifungal drug:

What is the **DURATION** of the antifungal prophylaxis in **allo-HSCT**?

- Until engraftment (Absolute neutrophil count $5 \times 10^9/L$)
- Until day +100 after HSCT
- Until discontinuation of immunosuppressive therapy
- If present, as long as the child is being treated for GvHD
- Other

Do you recommend **ANTIBIOTIC** prophylaxis in **autologous** HSCT?

- Always
- Never
- In only selected cases
- Other

Please describe selected cases:

Please describe other:

Which **ANTIMICROBIAL** prophylaxis would you prescribe in **auto-HSCT**? *(the answer could be multiple):*

- Amoxicillin/ampicillin
- Amoxicillin + clavulanic acid
- First-generation cephalosporin (e.g. cefazolin)
- Second-generation cephalosporin (e.g. cefuroxime)
- Third-generation cephalosporins (e.g. cefotaxime or ceftriaxone)
- Antipseudomonal third-generation cephalosporins (e.g. ceftazidime)
- Fourth-generation cephalosporins (e.g. cefepime)
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- Fluoroquinolone: ciprofloxacin
- Fluoroquinolone: levofloxacin
- Aminoglycoside: amikacin
- Aminoglycoside: tobramycin
- Aminoglycoside: gentamycin
- Colistin
- Other

What is the **DURATION** of the antimicrobial prophylaxis in **auto-HSCT**?

- Until engraftment (Absolute neutrophil count $5 \times 10^9/L$)
- Until day +100 after HSCT
- Until discontinuation of immunosuppressive therapy
- If present, as long as the child is being treated for GvHD
- Other

Free Text Question

Do you recommend **ANTIFUNGAL** prophylaxis in **autologous HSTC**?

- Always
- Never
- In only selected cases
- Other

Please describe selected cases:

Please describe other:

Which **antifungal** prophylaxis would you prescribe in **auto-HSCT**? *(the answer could be multiple)*

- Echinocandins
- Voriconazole
- Fluconazole
- Posaconazole
- Isavuconazole
- Liposomal Amphotericin B
- Other

What is the **DURATION** of antifungal prophylaxis in **auto-HSCT**?

- Until engraftment (Absolute neutrophil count $5 \times 10^9/L$)
- Until day +100 after HSCT
- Until discontinuation of immunosuppressive therapy
- If present, as long as the child is being treated for GvHD
- Other

Do you recommend **ANTIBIOTIC** prophylaxis in HSCT?

- Always
- Never
- In only selected cases
- Other

Please describe selected cases:

Please describe other:

Which **ANTIMICROBIAL** prophylaxis do you prescribe in HSCT? *(the answer could be multiple):*

- Amoxicillin/ampicillin
- Amoxicillin + clavulanic acid
- First-generation cephalosporin (e.g. cefazolin)
- Second-generation cephalosporin (e.g. cefuroxime)
- Third-generation cephalosporins (e.g. cefotaxime or ceftriaxone)
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- Aminoglycoside: gentamycin
- Colistin
- Other

What is the **DURATION** of antimicrobial prophylaxis in HSCT?

- Until engraftment (Absolute neutrophil count $5 \times 10^9/L$)
- Until day +100 after HSCT
- Until discontinuation of immunosuppressive therapy
- If present, as long as the child is being treated for GvHD
- Other

Please describe other duration:

Do you recommend **ANTIFUNGAL** prophylaxis in HSCT?

- Always
- Never
- In only selected cases
- Other

Please describe selected cases:

Please describe other:

Which **antifungal** prophylaxis would you prescribe in HSCT? *(the answer could be multiple):*

- Echinocandins
- Voriconazole
- Fluconazole
- Posaconazole
- Isavuconazole
- Liposomal Amphotericin B
- Other

Describe other:

What is the **DURATION** of the antifungal prophylaxis in HSCT?

- Until engraftment (Absolute neutrophil count $5 \times 10^9/L$)
- Until day +100
- Until discontinuation of immunosuppressive therapy
- If present, as long as the child is being treated for GvHD
- Other

The patient has **KNOWN COLONIZATION** by MDR bacteria (e.g. MRSA or ESBL or carbapenem-resistant gram-negative bacteria).

* **Do you consider this colonization as a contraindication for transplantation?**

- No
- Yes, absolute contraindication
- Yes, relative contraindication
- Only for MRSA
- Only for ESBL
- Only for carbapenem-resistant gram-negative bacteria
- Other

If other, please describe:

* **Do you perform in this patient pre-transplant decolonization strategy?** *(the answer could be multiple)*

- No
- Yes, only for MRSA
- Yes, only for EBSL
- Yes, only for carbapenem-resistant gram-negative bacteria
- Other

If other decolonization strategy, please describe:

If **YES** or other, please select the type of therapy:

- Parenteral antibiotic therapy
- Aerosol antibiotic therapy
- Oral antibiotic decolonization (e.g. gentamicin or vancomycin)
- Topical decolonization
- Fecal microbiota for transplantation
- Other

Please describe other type of therapy:

If **YES**, for how long?

- 7 days
- 8-14 days
- 15-21 days
- Until the first negative microbiological sample
- Other

Please describe other duration:

Thank you for your time!



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