Australian and New Zealand Paired Kidney Exchange Program

Protocol 10: Latent Tuberculosis Infection Pathway for Donors



Latent Tuberculosis Infection Pathway for Donors

Background

It is expected that participating renal transplant centres in the Australian and New Zealand Paired Kidney Exchange (ANZKX) Program apply appropriate infectious disease screening protocols in their donor work ups according to their risks of infection/ transmission to their matched recipient. This should include tuberculosis (TB) where appropriate.

Screening of kidney donors for latent tuberculosis infection (LTBI) is required for those who are deemed high risk of transmission.

Epidemiology

The incidence of TB in Australia is approximately 5.5 per 100,000. In 2013 the Australian overseas born population represented the majority of TB notifications with an incidence rate of 18.4-19.5 per 100,000. Most frequent countries were India, Vietnam, Philippines, China and Nepal, which between them accounted for 50% of cases. The incidence in the indigenous population remains steady at 4.5-4.6/100,000 and the Australian born non-Indigenous 0.7 per 100,000.

Using the ANZDATA registry, the ethnicity of living donors is 87% donors Caucasian, 7.8% Asian, 0.9% Pacific Islander, 0.5% indigenous, 0.4% Maori and other 2.3%. Hence at least 10% of living kidney donors in Australia potentially have a higher risk of TB exposure.

Proposed pathway for LTBI in donors

The following pathway has been developed to ensure kidney donation to minimise risk of TB transmission in the program.

If a potential kidney donor has demonstrated the presence of <u>active TB</u> following investigation, the donation should not proceed, the patient should be referred to the unit TB clinic for institution of appropriate anti-tuberculous treatment and TB notification should occur.

The situation with a donor with LTBI is less clear-cut. Currently in Australia an individual diagnosed with LTBI is not routinely offered treatment unless they have additional risk. The ANZKX policy therefore is to screen and exclude donors with active TB. All donors should be stratified according to their risk of TB infection based on history, chest X-ray and urinalysis. Those deemed at high risk should undergo additional screening with Tuberculin Spot Test (TST) or Interferon Gamma Release Assay (IGRA) and three early morning urine cultures for alcohol and acid fast bacilli (AAFB). Pending the outcome of these tests and following the algorithm in Figure 1, a donor can be assessed for their suitability for donation in the ANZKX program.

Risk Stratification for TB Infection

All potential living kidney donors should be stratified according to their risk of TB transmission following the initial clinical history and examination assessment.

Those patients deemed to be at high risk are:

• Birth in a high risk country or prolonged travel (> 3 months) in high prevalence epidemiological areas (>40 per 100,000) (see Table 1)



- Close contact with persons with infectious TB
- Chest X-ray findings consistent with prior exposure
- Sterile pyuria
- Healthcare worker

Table 1

List of Countries with a Tuberculosis Incidence of 40 cases per 100,000 Persons or Greater

A – Eq		Er – Lib		Lit – Ph		Ro - Z	
Afghanistan	189	Eritrea	65	Lithuania	56	Romania	84
Algeria	75	Ethiopia	192	Macau (SAR of China)		Russian Federation	80
Angola	370	Fiji	51	Madagascar	236	Rwanda	56
Armenia	41	Gabon	465	Malawi	193	Sao Tome and Principe	97
Azerbaijan	69	Gambia	174	Malaysia	89	Senegal	139
Bangladesh	225	Georgia	99	Maldives	53	Sierra Leone	307
Belarus	55	Ghana	160	Mali	57	Singapore	44
Benin	60	Greenland	164	Marshall Islands	344	Solomon Islands	89
Bhutan	155	Guam	51	Mauritania	107	Somalia	274
Bolivia	117	Guinea	177	Micronesia	124	South Africa	834
Botswana	356	Guinea-Bissau	373	Moldova	152	South Sudan	146
Brazil	41	Guyana	93	Mongolia	428	Sri Lanka	65
Brunei Darussalam	58	Haiti	194	Morocco	107	Sudan	88
Burkina Faso	52	Honduras	43	Mozambique	551	Swaziland	565
Burundi	122	Hong Kong (SAR of China)	71	Myanmar (Burma)	365	Tajikistan	87
Cambodia	380	India	217	Namibia	489	Tanzania	306
Cameroon	212	Indonesia	395	Nauru	113	Thailand	172
Cape Verde	139	Iraq	43	Nepal	156	Timor-Leste (East Timor)	498
Central African Republic	391	Kazakhstan	89	Nicaragua	51	Тодо	52
Chad	152	Kenya	233	Niger	95	Turkmenistan	70
China (including Taiwan)	67	Kiribati	551	Nigeria	322	Tuvalu	232
Congo	379	Korea, People's Rep (North)	561	Northern Mariana Islands	58	Uganda	202
Congo, Democratic Republic	324	Korea, Republic of (South)	80	Pakistan	270	Ukraine	91
Cote d'Ivoire	159	Kyrgyzstan	144	Palau	76	Uzbekistan	79
Djibouti	378	Lao	182	Panama	50	Vanuatu	63
Dominican Republic	60	Latvia	41	Papua New Guinea	432	Viet Nam	137
Ecuador	52	Lesotho	788	Paraguay	41	Yemen	48
El Salvador	43	Liberia	308	Peru	119	Zambia	391
Equatorial Guinea	172	Libya	40	Philippines	322	Zimbabwe	242

Table presents tuberculosis incidence rate per 100,000 population. Source: WHO Global Tuberculosis Report 2016 <u>www.who.int/tb/publications/global_report/en/index.html</u>

Screening for Active and Latent TB Infection (Figure 1)

For low risk patients as based on clinical history:

Chest X-ray and urine microscopy are adequate screening tests.

For high risk patients as based on clinical history:

Chest X-ray, urine microscopy, urine culture for AAFB should be performed along with either the tuberculin skin test (TST) and/or IGRA test depending what is locally available.

Actions following Screening

In low risk patients, if urine microscopy and chest X-ray is normal the donor is suitable to proceed with minimal risks of TB transmission.

If urine shows sterile pyuria, the donor is at high risk for active TB and send 3 early morning urine samples for AAFB culture and investigate appropriately.

If the chest X ray shows findings suggestive of previous infection with TB such as apical fibrosis, hilar lymphadenopathy, calcified granuloma or pleural plaque, the potential kidney donor needs full assessment to ensure that active TB is not present.



Donors with positive chest X-ray and/or urine microscopy should referred to local TB/chest clinic/infectious disease service and investigated for TB infection If active infection is excluded latent TB should be considered to be present.

In high risk potential kidney donors, if chest X-ray and urine culture for AAFB are both negative for TB and the TST and/or IGRA are negative then they are deemed safe to proceed with kidney donation.

If chest X-ray and urine AAFB culture are both negative for TB **BUT** the TST and/or IGRA are positive in a potential kidney donor, the donor is diagnosed *with latent TB infection (LTBI*) and their management is discussed in further detail below.

Management of LTBI donors

Treatment of LTBI reduces the incidence of active TB by 60-90% depending on compliance. Prophylactic isoniazid used to treat LTBI has significant morbidity and hence currently individuals in Australia diagnosed with LTBI are only offered treatment for TB based on a risk assessment, comparing risk of reactivation with risk of drug toxicity.

In Australia variation in practice exists across units with respect to treatment of the LTBI donor and hence not all living kidney donors are routinely offered treatment. ANZKX acknowledges that decisions regarding treatment of LTBI donors should be made by the caring team in consultation with local TB/Infectious Diseases service.

The ANZKX program does not deem treatment of a LTBI donor a prerequisite to entering the program, but requires notification of ANZKX of LTBI positivity of a donor and if treatment has been given.

Expected outcome of matched donors with LTBI

At the time of matching the ANZKX will notify a matched recipient centre if a donor has been diagnosed with LTBI and whether treatment has occurred or not. The recipient centre may choose one of three options:

- 1 to reject the donor
- 2 to accept the donor and give prophylaxis to their recipient or
- 3 to accept the donor and monitor their recipient for TB infection

In the situation where a donor is accepted who has been identified with LTBI and has not been treated, informed consent of the recipient must be obtained. An ANZKX-specific consent form will need to be signed and a copy .uploaded to the KPD enrolment in OrganMatch via the transplantation portal

When a donor is accepted who has been treated for LTBI, the risk of transmission is exceedingly low. Consequently the recipient centre will be informed of that the donor has received treatment in order that vigilance for TB occurs in the setting of a febrile illness with their recipient.

Enrolment information of donors with LTBI

It is therefore possible that a donor with LTBI, if not treated, might be refused by the recipient unit. The likelihood of this of this occurring will depend on the characteristics of the matched recipients.

It is therefore advisable that the donor centre informs the donor of this possibility at the time of registration in the ANZKX program. The donor unit has the discretion to enter such donors, withdraw them from the program or to consider treatment or alternatively look for another donor for their recipient.





Figure 1: Screening for active and latent TB Infection

Contributing Authors

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- 10 KDIGO Clinical Practice Guideline on the evaluation and Follow-up care of Living Kidney Donors (http://www.kdigo.org/clinical_practice_guidelines/LivingDonor/)



VERSION CONTROL								
Version	Date	Author	Comments					
V 1.0	Jul 2019	ANZKX Team	AKX transitioned to ANZKX					
V 1.0	Feb 2021	ANZKX Team	Reviewed no changes					
V 2.0	Nov 2021	ANZKX Team	MMEx transitioned to OrganMatch					

