



RACP
Specialists. Together
EDUCATE ADVOCATE INNOVATE

Circumcision of Infant Males

December 2022

145 Macquarie Street, Sydney NSW 2000, Australia
Telephone +61 2 9256 5444 | Facsimile +61 2 9251 7476 | Email policy@racp.edu.au

Contents

Executive Summary	3
Introduction.....	4
1. Circumcision in infant males	5
Technique.....	5
Contraindications to circumcision in infant males	5
Complications.....	5
Anaesthesia and analgesia	6
2. Health conditions to consider	8
Urinary tract infection	8
Known urinary tract abnormalities	8
Normal urinary tract	8
Sexually transmitted infections.....	9
Human immunodeficiency virus (HIV).....	9
Human papillomavirus (HPV).....	10
Penile cancer and prostate cancer	11
3. Legal and ethical considerations.....	12
Legal status of infant circumcision	12
Ethical considerations of infant circumcision	12
Glossary	14
References	15

About The Royal Australasian College of Physicians (RACP)

The RACP trains, educates and advocates on behalf of physicians and trainee physicians, across Australia and Aotearoa New Zealand. The RACP represents a broad range of medical specialties including general medicine, paediatrics and child health, cardiology, respiratory medicine, neurology, oncology, public health medicine, infectious diseases medicine, occupational and environmental medicine, palliative medicine, sexual health medicine, rehabilitation medicine, geriatric medicine, and addiction medicine. Beyond the drive for medical excellence, the RACP is committed to developing health and social policies which bring vital improvements to the wellbeing of patients and the community.



We acknowledge and pay respect to the Traditional Custodians and Elders – past, present and emerging – of the lands and waters on which RACP members and staff live, learn and work. The RACP acknowledges Māori as tangata whenua and Te Tiriti o Waitangi partners in Aotearoa New Zealand.

Executive Summary

This position statement on circumcision of infant males is for medical practitioners who are considering this procedure for a male infant.

Circumcision is generally a safe procedure but there are risks of minor complications and some rare but serious complications. Ethical and human rights concerns have been raised regarding elective infant male circumcision because it is recognised that the foreskin has a functional role, the operation is non-therapeutic, there are risks in anaesthesia in this age group and the infant is unable to consent.

After reviewing current evidence, the Royal Australasian College of Physicians (RACP) believes that the frequency of diseases modifiable by circumcision, the level of protection offered by circumcision and the complication rates of circumcision do not warrant routine infant circumcision in Australia or Aotearoa New Zealand. The RACP recommends that circumcision should be considered for infant males with significant urinary tract abnormalities. Where an infant male has a normal urinary tract, it is reasonable for parents to consider the benefits and risks of circumcision and to determine whether to circumcise their male infant.

If parents request a circumcision for their male infant the medical practitioner is obliged to provide accurate unbiased and up-to-date information on the risks and benefits of the procedure. Parental choice should be respected.

If parents choose circumcision for their male infant the procedure should be undertaken by an appropriately trained competent medical practitioner, using appropriate anaesthesia and analgesia, in a safe, child-friendly environment, capable of dealing with potential complications.

Please note this position statement is not planned to be updated again following this iteration. If new evidence emerges following publication of this document, it is suggested that a new position statement document be created.

Introduction

The procedure of circumcision in a male refers to the surgical removal of the foreskin of the penis. This position statement relates to circumcision of male infants, which is defined as males in the first 12 months of life – the infant period, with a focus on the newborn period – the first 28 days of life. This position statement does not relate to males beyond the infant period or circumcision/genital mutilation/cutting of females. This position statement is provided as a guide to medical practitioners for assisting parents in decision-making. The infant's best interests are to be always maintained.

This position statement has been developed after a review and evaluation of the medical and scientific literature and evidence. This review noted that the overall quality of published papers regarding circumcision in infant males is low. This is due to several reasons, including the ethical considerations of research on infants, the inability for trials to be blinded and sensitivities in this subject area.

If circumcision in an infant male is performed, it must be performed in appropriately resourced facilities with adequate analgesia and anaesthesia. It is critical that the medical practitioner performing the circumcision in infant males have appropriate qualifications, skills, training, and recent experience. The procedure must be performed in an appropriate setting that can deal with the age group and comorbidities of the infant.

A note on terminology:

The term 'parents' is used in this position statement to refer to the adult/s who are responsible for the care and wellbeing of the infant, and who make medical decisions on their behalf. The specific relationship between the infant and this adult will vary depending on the person's cultural background and other circumstances. It may include birth parent/s, step or adoptive parents, legal guardian/s, kin or whānau.

The term 'medical practitioner' is used in this statement to refer to a person who practices medicine in the healthcare sector.

1. Circumcision in infant males

Technique

There are many methods of circumcision used throughout the world. In general terms, the steps of circumcision involve:

- Freeing the foreskin from the glans,
- Excising the foreskin,
- Providing haemostasis, and
- Facilitating wound healing.

The medical practitioner performing the circumcision in infant males should discuss with the infant's parents the method that they will use, ensure the parents are well informed about the expected benefits and the risks of the procedure, and advise on the care that will be required following the procedure. The medical practitioner must highlight any signs that should prompt parents to seek urgent medical attention.

Contraindications to circumcision in infant males

There are a small number of contraindications to infant circumcisions, which can be grouped into three areas:

1. **Health status of the infant:** pre-term, ex pre-term with increased risk of postoperative apnoea, sick or otherwise unstable; infant weight should also be considered as the infant may be too small for the procedure to be performed safely. However, infants weighing >5.1kg have been shown to be at higher risk of complications in one study.¹
2. **Potential for bleeding disorders:** such as parental refusal of vitamin K administration at birth, previous signs of a bleeding disorder, or family history of a bleeding disorder.
3. **Congenital malformations:** such as hypospadias, buried penis, penoscrotal webbing.

Anaesthesia in children less than 12 months old is high risk.

Medical practitioners should consider the above on a case-by-case basis, as individual factors will determine if these are an absolute contraindication or if processes can be implemented to mitigate the risks associated with the condition.

An important consideration is whether the facility can manage the procedure appropriately and adequately trained staff are available to manage any potential complications.

Complications

Most complications of circumcision are minor, but some can be severe. The overall reported rate of complications after circumcision is variable but depending on the situation in which it is performed and the precise definition of complication, the complication rate is generally

believed to be between 0.4% and 16%.^{2,3} A 2010 systematic review reported a median complication rate of 1.5%, with a range of 0-16% for any adverse events, with a serious adverse event rate of 0%.⁴

A retrospective chart review of complications following newborn circumcision performed at a baby nursery, neonatal intensive care unit and special care nursery from 2007 to 2010 in the United States of America found rates of complications were low in their institution with 47 patients (0.67%) of the 7,038 patients circumcised within all three facilities experiencing a complication.⁵

Early complications include bleeding,^{2,6,7,8} infection,^{5,7,9} and very rarely death.^{7,8,10} Late complications include inadequate skin removal,¹¹ cosmetic issues,⁸ adhesions,^{1,9} skin bridges,¹ secondary buried penis,¹² phimosis¹³ and meatal stenosis,⁸ although this last complication is disputed.

The most frequent acute problem following circumcision is haemorrhage, which may indicate an underlying vitamin K deficiency or haemophilia. The risk of postoperative bleeding after circumcision is reported to be as high as 3% but is generally thought to occur at a rate of about 0.8%.^{3,14,15}

Anaesthesia and analgesia

Circumcision in infant males without anaesthesia and analgesia is unacceptable practice in Australia and Aotearoa New Zealand. The choice of anaesthesia and analgesia must be made in the context of the specific clinical situation, the facilities and staff available and with appropriate informed consent. Relevant options are considered below.

An important note is that while the previous version of this position statement suggested sucrose was an acceptable option, sucrose should be reserved for brief procedures such as heel prick blood tests. Topical local anaesthesia is also not suitable for management of pain with circumcision.

Infant anaesthesia is high risk^{16,17}. As such, delay of non-therapeutic and minor procedures until the child is over 12 months of age is usual. Delay until after 12 months of age would be particularly considered where other higher risk comorbidities are present, with American Society of Anaesthesiologists (ASA) classification status greater than 2.

Anaesthetists caring for infants must have appropriate skills and experience in this age group. All anaesthetists are expected to be able to anaesthetise children over 2 years of age (refer to the Guideline for Provision of anaesthesia care to children - PG29A and PG29A-BP). Anaesthetists with skills in the under 12 months of age group are required to provide infant anaesthesia care.

It is critical that the medical professionals delivering anaesthesia and those performing the circumcision in infant males have appropriate qualifications, skills, training, and recent experience in the age group. The procedure must be performed in an appropriate setting that can deal with the age group and comorbidities of the infant. Up-to-date paediatric resuscitation qualifications and access to equipment to deal with emergency situations are critical. While adverse events are unlikely, the impact may be life threatening if appropriate

emergency response is not available. Delivery of anaesthesia must be in line with the Australian and New Zealand College of Anaesthetists (ANZCA) professional documents that include requirements for equipment and an assistant to the anaesthetist.

Postoperative apnoea is a major risk following anaesthesia or sedation in term infants less than 46 weeks Post Menstrual Age (PMA), and ex-premature infants less than 54 weeks PMA. The negligible baseline risk is not reached until infants are greater than 60 weeks PMA. Overnight apnoea monitoring is required in these high-risk groups, and they are not suitable for day case surgery.

The following guidance on pain management is summarised from ANZCA's publication *Acute Pain Management: Scientific Evidence*, 5th edition.¹⁸ As this document is updated in response to evidence evolving, it is strongly recommended that medical professionals refer to the most up to date version of the guidance document when choosing the most effective options for the circumcision of infant males.

Key considerations from the above guidance include:

- Topical local anaesthetic or sucrose do not adequately control pain associated with circumcision in awake infant males.
- Caudal anaesthesia, penile nerve block and ring block are utilised for effective perioperative analgesia and are commonly administered under general anaesthesia prior to commencement of the surgical procedure.
- Postoperative oral analgesia should be administered as per local protocols and is normally required for several days postoperatively. Nonsteroidal anti-inflammatory medications can be used in the greater than 3-month age group.

2. Health conditions to consider

Urinary tract infection

In the first twelve months of life, the incidence of urinary tract infections (UTI) in uncircumcised males with normal urinary tract is low but varies according to infant age with those under 6 months at the highest risk.¹⁹ It is approximately 4-5 times lower in circumcised males. In infant males with abnormal urinary tract, the risk of recurrent UTIs is higher than those with no abnormalities, with the specific level of risk varying depending on the severity and the underlying urinary tract abnormality.

UTI generally causes acute febrile illness with 7% of infants presenting with fever found to have a UTI.²⁰ Of infants presenting with fever, uncircumcised males under the age of 3 months have been found to have the highest prevalence of UTI, approximately 20%. Risk factors for renal scarring following a UTI include a temperature of greater than 39 degrees, presence of non-E. coli organism and abnormal renal tract.²¹ There is an association between UTIs and chronic kidney disease in males with congenital abnormalities of the kidney and urinary tract (CAKUT) but UTI, associated with a normal urinary tract, has not been proven to result in chronic kidney disease. About 1 in 20,000 children with a history of UTI will develop end-stage kidney disease.²⁰

Known urinary tract abnormalities

Where a male fetus is identified on antenatal ultrasound as having anatomical abnormalities of the urinary tract, this should be discussed appropriately with the parents. Following birth, follow up in a tertiary centre with a paediatric urologist should be arranged to discuss the findings. If postnatal imaging confirms or detects the presence of high-grade abnormalities discussion should occur between the healthcare team and the family as to appropriate treatment options.

The following abnormalities place a child at a higher risk of recurrent UTIs¹⁹:

- Posterior urethral valves (PUVs): 56%
- Primary or congenital megaureter: 40%.
- High grade vesico-ureteric reflux without PUVs: 30%
- Neuropathic bladder: 24.2%
- Severe upper tract dilatation due to pelvic-ureteric junction obstruction: 14%

Circumcision in infant males has been shown to be more effective in preventing UTIs than antibiotic prophylaxis alone,²² which is important when the risk of UTI is higher than the population baseline risk. Where the male infant has one of these abnormalities confirmed the treating medical practitioner should discuss whether circumcision should be part of the infant male's treatment plan.

Normal urinary tract

In the absence of demonstrated urinary tract abnormalities, the prevalence of UTI is approximately 1-2% in infant males.¹⁹ A systematic review in 2005 combined results from 12 randomised controlled trials, cohort studies, and case-control studies that investigated the

association of circumcision and UTI and concluded that circumcision reduces the risk of UTI by 10-fold.²³ A more recent meta-analysis in 2008 of 18 studies of the prevalence of UTI confirmed the greater rates of UTI in uncircumcised males.²⁰

However, studies looking at the overall number of infant males with normal urinary tracts who would need to be circumcised to prevent one UTI estimate this to be 111-125 because of the low baseline risk of UTI.²⁴ Accordingly, it is not recommended that circumcision be used as a method of prevention of UTIs for this group.

Sexually transmitted infections

Conflicting evidence exists regarding the association between circumcision and sexually transmitted infections (STI) based on the type of research study, the specific STI and the population and setting in which the study was undertaken. Research findings from three population-based random surveys of men performed in Australia, the United States of America and the United Kingdom have shown relatively consistent results and no difference in the proportion of circumcised and uncircumcised men reporting ever being diagnosed with any STI, bacterial STI, or viral STI. These surveys also found no association between circumcision and gonorrhoea, genital chlamydia, syphilis, non-specific urethritis, genital herpes, genital warts, or trichomonas.^{25,26,27}

A longitudinal study conducted among men up to 25 years of age in Christchurch, Aotearoa New Zealand reported that circumcision was protective against STI in general.²⁸ These findings were at variance with a similar sized study of a cohort born in Dunedin, Aotearoa New Zealand five years earlier. In the Dunedin study serological evidence of HSV2 infection (the commonest cause of genital herpes) to age 26 years and self-reported STIs to age 32 years were not different in men circumcised and uncircumcised.^{29,30}

By contrast, a systematic review and meta-analysis of 26 research studies found circumcised men to have a reduced risk of syphilis and a lower association rate with genital herpes and chancroid. These studies were performed principally in African countries (20/26 studies) and among men at higher risk of STI (16/26 studies). An assessment and summary review of research studies of additional STI highlighted that male circumcision was protective against gonorrhoea, but that there was no association or inconclusive evidence of an effect of circumcision on genital herpes, genital warts and chlamydial, non-gonococcal or other types of urethritis.^{31,32} Circumcision appears not to decrease the risk of STIs for men who have sex with men.³³

Recent follow-up of adult circumcision in Africa has confirmed the protective effect of circumcision against acquisition of HPV and HSV infections.^{34,35,36} There were lower rates of other infections in these studies as well, including chlamydia and trichomonas in some studies, but lack of evidence of protection in others.³⁷

Human immunodeficiency virus (HIV)

Three randomised controlled trials published between 2007-2009 and conducted in South Africa, Uganda and Kenya, all countries with high prevalence of human immunodeficiency virus (HIV), reported benefit of adult male circumcision in reducing HIV incidence in men,

with circumcision halving the risk of adult males contracting HIV through heterosexual intercourse.^{38,39,37} Prior to these trials, a comprehensive assessment and systematic review of 37 observational studies undertaken in 2005 also showed a consistent association between male circumcision and prevention of HIV.^{40,41} A further systematic review was undertaken in 2007 confirming these results.⁴¹ A population survey conducted in South Africa in 2002 however failed to show benefit of circumcision in prevention of acquisition of HIV.⁴² In addition, there has been recent criticism of early cessation of clinical trials that show clear therapeutic benefit, because of the tendency for this practice to over-emphasise benefit.⁴³

A systematic review published in 2008 was equivocal about the protective benefits of circumcision in protecting men who have sex with men from HIV transmission but recommended further evaluation.⁴⁴ A Ugandan study showed that adult male circumcision did not reduce the acquisition of HIV by the female sexual partners of HIV infected, circumcised men, and suggested an increased risk of HIV acquisition in these women.⁴⁵

It is not clear that the findings from African studies, where the predominant mode of HIV transmission is heterosexual intercourse, can be extrapolated to Australia and Aotearoa New Zealand or other western countries, which have much lower rates of HIV infection and where the predominant mode of transmission is penile-anal sex among men.^{9,46} An Australian report from 2009 provides some information on this issue. A longitudinal study of 1,427 initially HIV-negative homosexual Australian men showed that in the 53 who later seroconverted, circumcision status was not identified as a relevant factor.³³ However, among those with a preference for the insertive role in anal intercourse, being circumcised was associated with a reduction in risk of HIV seroconversion.

Darby and Van Howe argue that circumcision is primarily seen as effective in reducing HIV transmission through heterosexual contact; in Australia HIV is largely found in homosexual men (80%) as well as injecting drug users (4%).⁴⁷

Human papillomavirus (HPV)

Human papillomavirus (HPV) causes genital warts in men and women and has been commonly linked with cancer of the cervix, with up to 99% of cases attributed to infection by oncogenic HPV genotypes. HPV infection prevalence was 7% among Australian men in 2015.⁴⁸

Most published studies investigating the association between circumcision and HPV were undertaken in African countries and included male participants who were circumcised as adults.² A systematic review including these studies reported that six randomised controlled trials conducted in African men demonstrated a reduction in oncogenic HPV in circumcised men. It was also reported that in Australian homosexual men who practice insertive intercourse, circumcision was associated with a 57% reduction in incidence of HPV.² In contrast to these findings, a study which followed men born in Aotearoa New Zealand in 1973 found positive results for HPV at age 16 or 18 or 32 years were lower in the uncircumcised participants than the circumcised participants.²⁹

Vaccination for HPV was introduced for males in Australia in 2013 and Aotearoa New Zealand in 2017. The vaccine used until 2018 protects against HPV types 6, 11, 16 and 18 (known as 4vHPV), with five further types (types 31, 33, 45, 52 and 58) added in January 2018. A retrospective HPV DNA analysis of stored urine and urethral specimens from heterosexual men 25 years and younger who were positive for chlamydia found that the prevalence of 4vHPV types declined between 2004 and 2015 (pre-vaccination 18%, post-vaccination 7%).² Further, modelling of the future impact of vaccination has demonstrated that, in Australia, the age-standardised annual incidence of cervical cancer will decrease to fewer than four new cases per 100,000 women by 2028.⁴⁹

Penile cancer and prostate cancer

Penile cancer is extremely rare in Australia, with approximately 1 in 200,000 men diagnosed each year.⁵⁰ The increased risk of cancer of the penis in uncircumcised men is strongly associated with phimosis.^{2,51} A number of other factors including genital warts, poor genital hygiene, previous genital conditions, penile rash (lasting longer than 1 month) or penile tear, smoking, past sexually transmitted diseases, and multiple sexual partners, have all been identified as risk factors.^{2,52,53,54} A study of Danish men showed a decrease in prevalence of penile carcinoma from 1.15 per 100,000 person years in 1943-47 to 0.8 per 100,000 person years in 1988-90. Considering the low and constant circumcision rates (2.3%) in Denmark, researchers attributed the fall to improved sanitary installations and associated penile hygiene.⁵⁵

Prostate cancer is the most common cancer diagnosed among men in both Australia and Aotearoa New Zealand. A case control study published in 1996 showed a link between circumcision and a lower risk of prostate cancer.⁵⁶ However, this association has not been consistently shown in other studies and more recent reviews have failed to confirm it.^{57,58,59}

3. Legal and ethical considerations

Legal status of infant circumcision

Circumcision of males is legal in Australia and Aotearoa New Zealand.

Aotearoa New Zealand medical practitioners who perform the procedure are covered by several laws and regulations. Circumcision is defined as a restricted activity under the Health Practitioners Competency Assurance Act (2003).⁶⁰ This means that the procedure is only to be performed by a medical practitioner.

There is no overarching legislation in **Australia**, or established case law regarding this matter. In the case of therapeutic circumcision of infant males, medical practitioners should follow their standard procedures for establishing informed consent from parents/guardians, and the policies and procedures of their employer.

A legal convention applying to the best interest of children is Article 3 of the United Nations Convention on the Rights of the Child.⁶¹ This international treaty has been ratified by Australia and Aotearoa New Zealand. Article 3 requires that, in all actions concerning children, the best interests of the child shall be the primary consideration. This is consistent with Aotearoa New Zealand and Australian legislation.

Ethical considerations of infant circumcision

There are benefits and harms from infant circumcision. Good ethics depends on good data. The data on the benefits and harms of infant male circumcision are summarised elsewhere in this document.

In general, parents make decisions about a child's health and wellbeing until the child can decide for themselves. Society acknowledges that parents want the best for their child and therefore trusts them to make good or 'good enough' decisions for their child. Medical practitioners may not always agree with parents' choices but should respect the parent decision and ensure unbiased information regarding risk is provided to support shared decision making. Respecting parental authority over decisions regarding a child's health is the default position in a pluralistic, democratic society.

There is a range of views about infant male circumcision. On the one hand is the view that infant male circumcision should be universal/more widely available, with those promoting this view arguing that the benefits so outweigh the risks that compulsion is justified. On the other hand, those opposing male infant circumcision argue that a child's right to body integrity should be respected and circumcision should be prohibited until the boy is old enough to decide for himself.

The American Academy of Pediatrics (2012) found that the health benefits of infant male circumcision outweigh the risks, but did not find that the benefits are great enough to recommend universal newborn circumcision.⁶² Other analogous organisations in Australia, Aotearoa New Zealand, Canada, the United Kingdom and Europe have not found that the benefits outweigh the risks, but nor have they recommended either compelling or banning

routine male circumcision.⁶³ For example, while the Royal Dutch Medical Association considers infant circumcision a violation of a child's right to physical integrity, they do not recommend that it be made illegal, but do emphasise the importance of parents' informed decision making and of ongoing discussion with religious and cultural groups for whom circumcision is an important ritual.⁶⁴

If we agree that parents should be allowed to choose whether their male infant is circumcised, we can concentrate on common ground. We can agree on the following points:

1. That parents should be informed adequately about the risks before performing circumcision.
2. That circumcision should be made as safe as possible and with as little pain as possible.
3. Circumcision should be performed by a competent operator under safe, sterile conditions, with adequate anaesthesia and analgesia at a premium.

Glossary

Chordee: Curvature of the penis due to scar tissue or abnormality of the corpora cavernosa (the blood containing tissue that supports an erection).

Dorsal: The back or upper surface.

Epispadias: A rare malformation of the penis in which the urethra ends in an opening on the upper aspect (the dorsum) of the penis.

Foreskin: the thin layer of skin that covers the end of the penis.

Glans: The sensitive tip or “head” of the penis.

Haemostasis: a process to prevent and stop bleeding.

Hypospadias: A relatively common abnormality of the penis that appears as an abnormal opening of the penis (meatus) on the underside of the penis rather than at the end.

Megaureter: medical term for an enlarged ureter.

Meatus: Opening or passage.

Infant: First twelve months of life.

Neonate: First 28 days of life.

Paraphimosis: A condition in which the foreskin, once pulled back behind the glans penis, cannot be brought down to its original position.

Phimosis: Narrowing of the foreskin opening, leading to an inability to retract the foreskin over the glans penis.

Trichomonas: a common sexually transmitted infection caused by a parasite.

Urethra: The membranous tube through the body of the penis, through which urine is discharged from the bladder.

Urethritis: Inflammation of the urethra caused by infection.

Ventral: The anterior or lower surface.

References

- ¹ Kim JK, Koyle MA, Chua ME, Ming JM, Lee MJ, Kesavan A, et al. Assessment of risk factors for surgical complications in neonatal circumcision clinic. *Can Urol Assoc J J Assoc Urol Can.* 2019;13(4):E108–12.
- ² Morris BJ, Kennedy SE, Wodak AD, Mindel A, Golovsky D, Schrieber L, et al. Early infant male circumcision: Systematic review, risk-benefit analysis, and progress in policy. *World J Clin Pediatr.* 2017;6(1):89–102.
- ³ Weiss HA, Larke N, Halperin D, Schenker I. Complications of circumcision in male neonates, infants and children: A systematic review. *BMC Urol.* 2010;10(1):2.
- ⁴ Darby R. Infant circumcision in Australia: a preliminary estimate, 2000–10. *Aust N Z J Public Health.* 2011;35(4):391–2.
- ⁵ Srinivasan M, Hamvas C, Coplen D. Rates of complications after newborn circumcision in a Well-Baby Nursery, Special Care Nursery, and Neonatal Intensive Care Unit. *Clin Pediatr (Phila).* 2015 Oct;54(12):1185–91.
- ⁶ Sorokan ST, Finlay JC, Jefferies AL. Newborn male circumcision. *Paediatr Child Health.* 2015;20(6):311–5.
- ⁷ Edler G, Axelsson I, Barker GM, Lie S, Naumburg E. Serious complications in male infant circumcisions in Scandinavia indicate that this always be performed as a hospital-based procedure. *Acta Paediatr Oslo Nor 1992.* 2016;105(7):842–50.
- ⁸ Abara EO. Prepuce health and childhood circumcision: Choices in Canada. *Can Urol Assoc J J Assoc Urol Can.* 2017;11(1-2Suppl1):S55–62.
- ⁹ El Bcheraoui C, Zhang X, Cooper CS, Rose CE, Kilmarx PH, Chen RT. Rates of adverse events associated with Male circumcision in US medical settings, 2001 to 2010. *JAMA Pediatr.* 2014;168(7):625.
- ¹⁰ Morris BJ, Wodak AD, Mindel A, Schrieber L, Duggan KA, Dilley A, et al. Infant male circumcision: An evidence-based policy statement. *Open J Prev Med.* 2012;02(01):79–92.
- ¹¹ Friedman B, Khoury J, Petersiel N, Yahalomi T, Paul M, Neuberger A. Pros and cons of circumcision: An evidence-based overview. *Clin Microbiol Infect.* 2016;22(9):768–74.
- ¹² Eroğlu E, Bastian O, Ozkan H, Yorukalp O, Goksel A. Buried Penis After Newborn Circumcision. *Journal of Urology.* 2009;181(4):1841-1843.
- ¹³ Tuncer AA, Deger M. Incidence of complications following thermocautery-assisted circumcisions. *Urol J.* 2018;15(6):359–64.
- ¹⁴ Cathcart P, Nuttall M, van der Meulen J, Emberton M, Kenny SE. Trends in paediatric circumcision and its complications in England between 1997 and 2003. *British Journal of Surgery.* 2006;93(7):885-90.
- ¹⁵ Palit V, Menebhi D, Taylor I, Young M, Elmasry Y, Shah T. A unique service in UK delivering Plastibell (R) circumcision: review of 9-year results. *Pediatric Surgery International.* 2007;23:45 - 8.
- ¹⁶ Australia and New Zealand College of Anaesthetists Faculty of Pain Medicine and the Society for Paediatric Anaesthesia in New Zealand and Australia. Guideline for the Provision of anaesthesia care to children [internet]. [Melbourne]: ANZCA; 1997 [updated 2002, 2008, 2019, 2020 November; cited 2022 October 12]. (Clinical Guideline [PG29(A)]. Available from: [PG29\(A\)-Guideline-for-the-provision-of-anaesthesia-care-to-children-\(PS29\) \(anzca.edu.au\)](https://anzca.edu.au/PG29(A)-Guideline-for-the-provision-of-anaesthesia-care-to-children-(PS29))

-
- ¹⁷ Australia and New Zealand College of Anaesthetists Faculty of Pain Medicine and the Society for Paediatric Anaesthesia in New Zealand and Australia. Guideline for the Provision of anaesthesia care to children Background Paper 2020 [internet]. [Melbourne]: ANZCA; 1997 [updated 2002, 2008, 2019, 2020 November; cited 2022 October 12]. (Clinical Guideline [PG29(A) BP]. Available from: [PG29\(A\)BP-Guideline-for-the-provision-of-anaesthesia-care-to-children-Background-Paper-\(PS29BP\) \(anzca.edu.au\)](http://anzca.edu.au)
- ¹⁸ Schug SA, Palmer GM, Scott DA, Alcock M, Halliwell R, Mott JF; APM:SE Working Group of the Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine (2020), Acute Pain Management: Scientific Evidence (5th edition), ANZCA & FPM, Melbourne.
- ¹⁹ Bader M, McCarthy L. What is the efficacy of circumcision in boys with complex urinary tract abnormalities?. *Pediatric Nephrology*. 2013;28:2267-2272.
- ²⁰ Shaikh N, Morone N, Bost J, Farrell M. Prevalence of Urinary Tract Infection in Childhood: A Meta-Analysis *Pediatr Infect Dis J* 2008;27(4):302-8.
- ²¹ Shaikh N, Craig JC, Rovers MM, Da Dalt L, Gardikis S, Hoberman A, et al. Identification of children and adolescents at risk for renal scarring after a first urinary tract infection: a meta-analysis with individual patient data: A meta-analysis with individual patient data. *JAMA Pediatr* [Internet]. 2014;168(10):893–900. Available from: <http://dx.doi.org/10.1001/jamapediatrics.2014.637>
- ²² Gücük A, Burgu B, Gökçe İ, Mermerkaya M, Soygür T. Do antibiotic prophylaxis and/or circumcision change periurethral uropathogen colonization and urinary tract infection rates in boys with VUR? *J Pediatr Urol*. 2013 Dec;9(6):1131–6.
- ²³ Singh-Grewal D, Macdessi J, Craig J. Circumcision for the prevention of urinary tract infection in boys: a systematic review of randomised trials and observational studies. *Archives of Disease in Childhood*. 2005 August 1, 2005;90(8):853-8.
- ²⁴ Man Jiang, Jikui Deng, Guanglun Zhou, Shoulin Li, Gang Liu, Risk Factors for Recurrent Urinary Tract Infection in Children With Neurogenic Bladder Following Clean Intermittent Catheterization, *Urology*, 164, 2022, 224-229, ISSN 0090-4295
- ²⁵ Richters J, Smith A, de Visser R, Grulich A, Rissel C. Circumcision in Australia: prevalence and effects on sexual health. *Int J STD AIDS*. 2006;17(8):547-54.
- ²⁶ Diseker R, Peterman T, Kamb M, Kent C, Zenilman J, Douglas J, et al. Circumcision and STD in the United States: cross sectional and cohort analyses. *Sex Transm Infect*. 2000;76(6):474-9.
- ²⁷ Dave S, Johnson A, Fenton K, Mercer C, Erens B, Wellings K. Male circumcision in Britain: findings from a national probability sample survey. *Sex Transm Infect*. 2003;79:499-500.
- ²⁸ Fergusson DM, Boden JM, Horwood LJ. Circumcision Status and Risk of Sexually Transmitted Infection in Young Adult Males: An Analysis of a Longitudinal Birth Cohort. *Pediatrics*. 2006 November 1, 2006;118(5):1971-7.
- ²⁹ Dickson NP, van Roode T, Herbison P, Paul C. Circumcision and Risk of Sexually Transmitted Infections in a Birth Cohort. *The Journal of Pediatrics*. 2008;152(3):383- 7.
- ³⁰ Dickson NP, Ryding J, van Roode T, Paul C, Herbison P, Dillner J, et al. Male Circumcision and Serologically Determined Human Papillomavirus Infection in a Birth Cohort. *Cancer Epidemiology Biomarkers & Prevention*. 2009 January 2009;18(1):177-83.
- ³¹ Moses S, Bailey R, Ronald A. Male circumcision: assessment of health benefits and risks. *Sex Transm Infect*. 1998;74:368-73.
- ³² Tobian AAR, Serwadda D, Quinn TC, Kigozi G, Gravitt PE, Laeyendecker O, et al. Male Circumcision for the Prevention of HSV-2 and HPV Infections and Syphilis. *New England Journal of Medicine*. 2009;360(13):1298-309.

-
- ³³ Templeton D, Jin F, Mao L, Prestage G, Donovan B, Imrie J, et al. Circumcision and risk of HIV infection in Australian homosexual men. *AIDS*. 13 November 2009;23(17):2347-51.
- ³⁴ Tobian AA, Ssempijja V, Kigozi G, Oliver AE, Serwadda D, Makumbi F, et al. Incident HIV and herpes simplex virus type 2 infection among men in Rakai, Uganda. *AIDS*. 2009;23(12):1589-94 10.097/QAD.0b013e32832d4042.
- ³⁵ Tobian Aaron AR, Charvat B, Ssempijja V, Kigozi G, Serwadda D, Makumbi F, et al. Factors Associated with the Prevalence and Incidence of Herpes Simplex Virus Type 2 Infection among Men in Rakai, Uganda. *The Journal of Infectious Diseases*. 2009;199(7):945-9.
- ³⁶ Auvert B, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. *PLoS Med*. 2005;2:e298.
- ³⁷ Auvert B, Sobngwi-Tambekou J, Cutler E, Nieuwoudt M, Lissouba P, Puren A, et al. Effect of Male Circumcision on the Prevalence of High Risk Human Papillomavirus in Young Men: Results of a Randomized Controlled Trial Conducted in Orange Farm, South Africa. *The Journal of Infectious Diseases*. 2009;199(1):14-9.
- ³⁸ Bailey RC, Moses S, Parker CB, Agot K, Maclean I, Krieger JN, et al. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *The Lancet*. 2007 2007/3/2;369(9562):643-56.
- ³⁹ Gray R, Kigozi G, Serwadda D, Makumbi F, Watya S, Nalugoda F, et al. Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial. *Lancet*. 2007;369:657 - 66.
- ⁴⁰ Siegfried N, Muller M, Deeks J, Volmink J, Egger M, Low N, et al. HIV and male circumcision--a systematic review with assessment of the quality of studies. *The Lancet Infectious Diseases*. 2005;5(3):165-73.
- ⁴¹ Siegfried N, Muller M, Volmink J. Male circumcision for prevention of heterosexual acquisition of HIV in men. *Cochrane Database Syst Rev*. 2003;3(CD003362).
- ⁴² Connolly C, Simbayi L, Shanmugam R, Nqeketo A. Male circumcision and its relationship to HIV infection in South Africa: Results from a national survey in 2002. *South African Medical Journal*. 2008;98(10):789-94.
- ⁴³ Bassler D, Briel M, Montori VM, Lane M, Glasziou P, Zhou Q, et al. Stopping Randomized Trials Early for Benefit and Estimation of Treatment Effects: Systematic Review and Meta-regression Analysis. *JAMA*. 2010 March 24, 2010;303(12):1180-7.
- ⁴⁴ Millett GA, Flores SA, Marks G, Reed JB, Herbst JH. Circumcision Status and Risk of HIV and Sexually Transmitted Infections Among Men Who Have Sex With Men: A Meta-analysis. *JAMA*. 2008 October 8, 2008;300(14):1674-84.
- ⁴⁵ Wawer MJ, Makumbi F, Kigozi G, Serwadda D, Watya S, Nalugoda F, et al. Circumcision in HIV-infected men and its effect on HIV transmission to female 27 partners in Rakai, Uganda: a randomised controlled trial. *The Lancet*. 2009 2009/7/24;374(9685):229-37.
- ⁴⁶ Xu X, Patel D, Dalton V, Pearlman M, Johnson T. Can routine neonatal circumcision help prevent human immunodeficiency virus transmission in the United States? *Am J Mens Health*. 2009;3(1):79-84.
- ⁴⁷ Darby R, Van Howe R. Not a surgical vaccine: There is no case for boosting infant male circumcision to combat heterosexual transmission of HIV in Australia. *Aust N Z J Public Health*. 2011;35(5):459-65.
- ⁴⁸ Chow EPF, Machalek DA, Tabrizi SN, Danielewski JA, Fehler G, Bradshaw CS, et al. Quadrivalent vaccine-targeted human papillomavirus genotypes in heterosexual men after the Australian female

human papillomavirus vaccination programme: a retrospective observational study. *Lancet Infect Dis*. 2017;17(1):68-77. 10.1016/S1473-3099(16)30116-5

⁴⁹ Hall MT, Simms KT, Lew J-B, Smith MA, Brotherton JML, Saville M, et al. The projected timeframe until cervical cancer elimination in Australia: A modelling study. *The Lancet Public Health*. 2019;4(1).

⁵⁰ Australian Institute of Health and Welfare. Cancer data in Australia [Internet]. Canberra: Australian Institute of Health and Welfare, 2022 [cited 2022 Jul. 19]. Available from: <https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia>

⁵¹ Madsen BS, van den Brule AJC, Jensen HL, Wohlfahrt J, Frisch M. Risk Factors for Squamous Cell Carcinoma of the Penis—Population-Based Case-Control Study in Denmark. *Cancer Epidemiology Biomarkers & Prevention*. 2008 October 2008;17(10):2683-91.

⁵² Aynaud, Piron, Bijaoui, Casanova. Developmental factors of urethral human papillomavirus lesions: correlation with circumcision. *BJU International*. 1999;84(1):57-60.

⁵³ Maden C, Sherman KJ, Beckmann AM, Hislop TG, Teh C-Z, Ashley RL, et al. History of Circumcision, Medical Conditions, and Sexual Activity and Risk of Penile Cancer. *J Natl Cancer Inst*. 1993 January 6, 1993;85(1):19-24.

⁵⁴ Tseng H-F, Morgenstern H, Mack T, Peters RK. Risk Factors for Penile Cancer: Results of a Population-Based Case-Control Study in Los Angeles County (United States). *Cancer Causes & Control*. 2001;12(3):267-77.

⁵⁵ Frisch M, Friis S, Kjær SK, Melbye M. Falling Incidence Of Penis Cancer In An Uncircumcised Population (Denmark 1943-90). *BMJ: British Medical Journal*. 1995;311(7018):1471.

⁵⁶ Ewings P, Bowie C. A case-control study of cancer of the prostate in Somerset and east Devon. *Br J Cancer*. 1996;74(4):661-6

⁵⁷ Hayes RB, Pottern LM, Strickler H, Rabkin C, Pope V, Swanson GM, et al. Sexual behaviour, STDs and risks for prostate cancer. *Br J Cancer*. 2000;82(3):718-25.

⁵⁸ Key T. Risk factors for prostate cancer. *Cancer Surv*. 1995;23:63-77.

⁵⁹ Oliver J, Oliver R, Ballard R. Influence of circumcision and sexual behaviour on PSA levels in patients attending a sexually transmitted disease (STD) clinic. *Prostate Cancer Prostatic Dis*. 2001;4(4):228-31.

⁶⁰ Ministry Of Health Government of New Zealand. Health Practitioners Competence Assurance Act 2003. In: Ministry Of Health, ed. Wellington 2003.

⁶¹ United Nations. Convention on the Rights of the Child. Geneva; 1989.

⁶² American Academy of Pediatrics. Task Force on Circumcision. Male circumcision. *Pediatrics*. 2012; 130: e756–e785.

⁶³ Jansen M. Routine circumcision of infant boys: It's time to make progress through the common ground. *Journal of Paediatrics & Child Health* 2016; 52: 477-9.

⁶⁴ KNMG. The non-therapeutic circumcision of male minors. KNMG, May 2010. Available at: <http://www.circumstitions.com/Docs/KNMG-policy.pdf>.