Report of the Cross Charity Dog Neutering Roundtable

Executive summary

Charity contexts are different to those that apply to owned animals. Having given careful consideration to the behavioural, medical and societal contexts we face and evidence base our view is that neutering is still an incredibly important element of our work. We recognise the value in guidelines for vets working in charity shelters and, while noting advice from WSAVA for a more individualised approach, we have created some general guidance and a flowchart.

We note that where specific situations of overbreeding or overpopulation exist -which may be geographical, breed related or due to other factors- charities may ask vets to neuter earlier than these guidelines state. We would ask vets to seek to understand these factors and support neutering for a wider population benefit where appropriate.

As the UKs large dog welfare charities our current, collective thinking is reflected below.
Please note that some organisations are reviewing their policies in light of the discussions and working towards the recommendations from the round table, so this list may not be fully aligned with individual charity policies. Please check with the charities you work with for their up to date position.

- We no longer recommend routine neutering of dogs under the age of six months (noting that for cats we still **strongly** recommend this). For dogs of greater than 20kg we have a preference for delaying until social maturity (over 12 months) and potentially for longer for giant breeds or ones where there is documented evidence that this is beneficial.
- Avoiding unwanted pregnancy is still a priority consideration and may necessitate earlier neutering, particularly of females, in some circumstances.
- Animals with characteristics that we do not want to risk being passed onto offspring and breeds that may be of high value to breeders and result in irresponsible breeding practices may require earlier neutering.
- Male dogs may remain unneutered where behavioural assessment indicates this is appropriate. In situations of resource and/or capacity constraints neutering of male dogs may be delayed or left to the decision of new owners, with appropriate advice to ensure that neutering takes place.
- Dogs should not be kept in the shelter setting and held back from adoption while waiting for neutering and dogs can be rehomed unneutered with robust follow-up where appropriate.

Charity decision making will also be impacted by contexts such as whether the charity has their own veterinary provision or they use private vets, practicalities of transport, staffing levels and financial considerations.

It is important that organisations monitor the impacts of changes in neutering policy, particularly around issues of overpopulation and abandonment.

Introduction

On the 11th February clinical professionals from across the charity sector met in London to discuss their response to the 2024 WSAVA guidelines for the control of reproduction in dogs and cats [1].

Recognising that the paper was focused on neutering decisions for owned animals we felt that it was important to review our charitable neutering protocols in line with the guidance and the increasing knowledge base about the potential impacts of neutering on health and behaviour.

We chose to focus on the issue of dog neutering as opposed to any other species because this was the area where we were receiving most queries from vets and where we felt there was the most new evidence to be considered.

Cat neutering is a priority activity to prevent serious cat overpopulation issues and associated welfare compromise. We strongly recommend pre-pubertal neutering in cats and refer colleagues to https://cat-kind.org.uk/ for more information.

This paper is not intended to be a full review of a literature, rather a holistic review of the WSAVA paper and the realities of the charity shelter/ clinic settings.

Attendees:

Lead veterinary surgeons and behaviourists from eight charities, who perform a significant amount of dog neutering within a charitable context, were invited.

The attendees were:

RSPCA: Beth Skillings MCRVS Head Vet: Clinical Services, Bryony Francis CCAB Head of Clinical Behaviour, Caroline Allen MRCVS Chief Vet, Vanessa Whitfield MRCVS Lead Vet: Branches-

Blue Cross: Alison Thomas MRCVS Head of Veterinary Services

Dogs Trust: Catherine Dobbie MRCVS, Tamsin Durston RVN CAB Veterinary Engagement Manager.

PDSA: Steve Howard MRCVS. Head of Clinical Services.

RVC: Louise Allum MRCVS head Vet of the Shelter Medicine Programme and also representing Wood Green.

Guide Dogs: Louisa Rodgers Head of Breeding, Welfare and Veterinary Services

Battersea: Shaun Opperman MRCVS, Veterinary Director.

Private Practitioner: Lorella Notari MRCVS RCVS Specialist in Veterinary Behaviour Medicine. RSPCA Veterinary Behaviour Consultant.

Background Information:

There is a growing evidence base about how neutering and the timing of neutering impacts individual animal's medical and behavioural health.

Charitable organisations, only too aware of the challenges of over-population, have traditionally strongly promoted the neutering of all dogs, Many are now aware that a more nuanced position may

be required in response to the changing evidence base. Some organisations have already made changes to their policies.

The publication of the WSAVA guidance [1] in 2024 was a detailed report that covered all aspects of neutering. This document is subject to an erratum [2] regarding the Section 6 Ethics of Reproduction Control in Dogs and Cats and that WSAVA is working with outside experts and organisations to produce an expanded guidance document covering these issues. We support this additional work and particularly note that the WSAVA guidance defines a population of “responsible pet owners” or “RPOs” where neutering of their dogs may not be advised. It does not, however, define or describe how these RPOs are identified which may present some challenges in applying this guidance. We hope this document will be a helpful addition to their discussions.

Topics such as surgical techniques are beyond the scope of the roundtable, which was focused on the decision of if and when to neuter.While this guidance is not designed for charity organisations, it will influence the thinking of veterinary surgeons and it is important that the charities are able to clearly explain their own positions, especially where they may be different to that recommended for owned animals.

Current Neutering Policies:

All organisations had reviewed their dog neutering protocols over the preceding few years and are continuing to monitor the science and data on this topic. A number of reviews[3-9] have helped inform the development of updated policies, with the paper by Hart et al 2020[5] being cited as a key influence.

In the case of charities performing public work (Blue Cross and PDSA) they continued to encourage neutering. Blue Cross have removed it as a requirement to access their services (PDSA never had a compulsory neutering policy). There is still an aim to neuter at the same time as correcting an inherited defect.

The current high demand for charitable services is also driving a change in approach. The need to prioritise services during periods of capacity constraint has resulted in a recommendation to PDSA hospitals that neuter capacity is prioritised according to the following criteria: High- female cats in multi-cat households or that go outside, male rabbits housed with entire male or entire female. Medium- younger bitches for greater benefit regarding mammary tumours, older bitches (6+) to prevent pyometra. Low, middle aged bitches (2-6 y), male patients not covered in higher prioritisation categories, Entire female rabbits not at risk of pregnancy.

A number of rehoming charities are still aiming to neuter every dog before they leave the shelter, unless there is a behaviour flag or evidence of a false pregnancy, but this was not universal. There was a recognition that with recent capacity issues within the veterinary sector this could increase length of stay, a problem from a throughput and animal welfare perspective.

It was felt that there was still an expectation from the public that dogs from a shelter will be neutered, although this has not been studied. We do not know how this will change if neutering becomes less commonly performed in owned animals. It is something that could be assessed and monitored by organisations adopting animals.

There was overall a much higher degree of flexibility in timings compared to 5+ years ago and neutering ages have generally risen.

A situation was described where a shelter had not been able to neuter a number of dogs according to the usual protocols, it was found that this could result in an increased level of stress for animals in the shelter. While direct studies on sexual odours from unneutered dogs in shelters are scarce, sexual pheromones and related scent cues can excite or distress other dogs and this can lead to increased vocalization, agitation, and even aggression. In this particular shelter it was reported to be more difficult to mix dogs and it was felt this situation overall resulted in an increased health and safety risk for animal care teams.

In terms of age of neutering there was some variation with some organisations having policies to delay for specific breeds, others differentiating purely on weight.

Male Dog Neutering:

The medical case for and against the neutering of male dogs:

Traditionally a case for the neutering of male dogs has been made on the basis of testicular tumours and prostatic problems,
From the incidence rates quoted in the WSAVA report [1] it is likely that neutering four male dogs probably prevents one-two cases of BPH (benign prostatic hyperplasia), and one testicular tumour, neutering six dogs prevents one anal adenoma.
These conditions are cured/controlled with castration at the time of identification of the condition, assuming that the owner presents the animal when the problem occurs, and that any comorbidities do not cause complications.
The situation around prostatic abscesses and cysts is more complicated and perineal hernias were recognised by the group as a significant welfare issue and not straight forward to manage.
The recommendation noted in the WSAVA report of the need for a regular complete andrological exam (which should include rectal palpation, prostatic ultrasound and assay of serum CPSE) to be repeated at least once/ year from when the dog has reached 40% of his life expectancy for clients opting to keep their male dogs intact (taken from Mantziaras et al., 2017[10]) is not linked with evidence around animal welfare and health improvements in the paper, only on the detection of certain prostatic abnormalities which may or may not be significant to those animals. This is also unlikely to be realistic from a cost perspective for a significant cohort of pet owners and could prove a barrier to adoption. It is not something that we currently recommend.

Urethral prolapse and paraphysmosis were all recognised as potential issues in unneutered male dogs but data is lacking, however urethral prolapse is recognised particularly in young, intact male brachycephalic breeds [1]. These are animals we may wish to neuter for other reasons. Malignant prostatic tumours are a disease of elderly dogs and while they are more common in neutered dogs, further investigation is required to understand if there is a link[1].

The issue of roaming and thereby suffering an increased risk from road traffic collisions and other accidents was raised but we did not have any data regarding these factors.

In imported dogs, the importance of screening for Brucella was noted and the fact that some organisations have seen cases of transmissible venereal tumours, which vets should be aware of.

In the case of cryptorchidism all organisations would remove the intraabdominal testicle and unless there was a specific behavioural contraindication would remove the other testicle during the same procedure, due to the risk of loss of follow up and the risk of an unnecessary exploratory surgery.

Regarding the risks of castration there is evidence that the risk of procedure complications is low[1].

The WSAVA guidelines[1] found that castration (neutering) in dogs is associated with an increased risk of obesity. There was some considerable debate on this issue, which is multi-factorial and, as some argued, should be manageable. However, it was discussed that for a dog that was excessively hungry and having to live under enforced calorie restriction, this would be welfare compromising - nutrition being one of the five domains. An increased risk of scavenging and associated food seeking behaviour could lead to caregiver burden and impact the human animal bond.

On the issue of whether castration increased the risk of cancer it was felt that there was more evidence required to enable definitive advice. Age was felt to be a significant confounding factor in a number of studies. WSAVA note that their “sources highlight the complex and often breed-specific relationship between gonadectomy and cancer risk in both dogs and cats”. We look forward to learning more from the Dogs Trust Generation Pup work as these dogs mature. Interestingly the PDSA’s own high level data around age at death showed neutered males live 17% longer, but again there will be other variables at play.

Of more concern was the impact on orthopaedic conditions. WSAVA concluded that the sources show “the occurrence of orthopaedic problems is a possible side effect of gonadectomy, especially when performed at <6 months of age and in large and heavy breeds/individuals…. However, even in small breeds like Dachshunds, intervertebral disc disease is a higher risk in gonadectomised dog”. The roundtable attendees noted that these conditions are long term and can cause significant welfare compromise, especially if appropriate treatment is not sought and maintained. There were some differences in view as to whether delaying neutering should be done on weight, or based on delaying only for certain breeds where the evidence exists.

The behavioural case for and against male dog neutering

WSAVA concluded “that the relationship between neutering and male dog behaviour is complex and not always predictable.”

The behaviour case for neutering is complicated by the fact that some of the common reasons why owners want their dog neutered is normal behaviour that is annoying to them e.g. marking the house or humping. This behaviour may be helping the dog cope with their situation, but it could be to the detriment of the human/animal bond. Neutering is likely to reduce behaviours directly influenced by testosterone, but the evidence around specific behaviours is equivocal[11].

There is therefore a challenge around balancing the human, including the wider population, and animal needs and helping people to understand and cope with the normal behaviour of puberty and intact adults.

As well as any direct hormone driven impacts there are impacts on social behaviours and off lead exercise opportunities, there is less evidence around these factors and the potential frustration caused by being an entire male dog kept on the lead and unable to mate.

In the context of rescue animals- who may have suffered poor socialisation, trauma and may have poor genetics- the interaction between stress and gonadal hormones were noted as being of particular importance. A key concern for charities is whether neutering could result in any potential worsening of fear-related behaviours and other behaviour problems linked to a lack of confidence.

The WSAVA guidelines note that some studies agree on the presence of a causal relationship between prepubertal gonadectomy and anxiety/lack of confidence or an increase in behavioural problems[9, 12-14] and neutered dogs seemed more likely to be fearful of noises than intact dogs[15]. A longer duration of gonadal presence reduces the likelihood of problematic behaviour, suggesting an impact of age at gonadectomy. A Guide Dogs for the Blind Association study did not find association between neutering age and behaviour apart from separation anxiety in males.

The WSAVA guidelines concluded that the “decision of whether and when to neuter a male dog should be based on the individual dog, the household, and the purpose for which the dog is kept. The literature can help predict possible effects in a population, but accurately predicting the impact on an individual dog's behaviour remains challenging”. This creates challenges for charity organisations with dispersed sites where protocols are generally expected and found to be very helpful.

Given the particular population of dogs in shelters, including an increasing number of dogs with challenging behaviours impacting their welfare and rehomability it was felt to be important that dogs showing signs of fear, lack of confidence, or nervousness (including noise sensitivity/fear), are assessed and, in this case particularly, neutering may not be advisable[13]. Where possible, the opinion of a qualified behaviourist should be sought.

Regarding the use of GnRH agonist implants these will help with behaviour related to testosterone e.g. sexual humping, sexual frustrations, but given the wide ranging effects there may be other impacts because, after an initial increase[16], they still deprive the brain of testosterone, which as noted above, may be inadvisable in certain individuals at certain times. This initial increase of sex hormonal concentration can cause problems in the shelter environment, with a possible increase of intraspecific aggression. Their use as a “trial” could also prolong the stay in the shelter which has a number of detrimental effects.

It was also noted that the experience of the castration process is likely to be important. Both the stress of surgery itself[17] and the developmental stage at which it occurs may contribute to later behavioural problems. Experiences during the juvenile to adolescent period (approximately 6 to 12 months of age) — a sensitive phase marked by ongoing brain and hormonal maturation — may increase the risk of fearfulness, anxiety, or aggression in adulthood[18]. There should be considerable efforts made to make the experience of castration, if performed, as positive as possible and shelters should be aiming to prepare dogs for the experience. For these reasons the behaviourists felt that waiting until dogs, regardless of size, are at least one year old before castrating them is advisable.

The population case for and against

In terms of general population control there is not a strong argument for the neutering of male dogs. However, there are considerations around individual animals, for example where they live with or in close proximity to unneutered females, certain breeds and the need to consider the risks of perpetuating poor gene pools through leaving certain dogs unneutered.

We noted that other countries don’t neuter males, but they manage their dogs in different ways, for example by keeping dogs on a lead much more than sometimes occurs in the UK. It would be helpful

for there to be more understanding of the contexts and outcomes in countries who approach population control in different ways.

The resource case for and against

As already mentioned, charities have finite resources and in the face of the post-pandemic cost of living challenges these resources are under serious pressure.

In terms of prioritisation, neutering of female cats and rabbits and of female dogs at risk of unwanted pregnancy should take precedence over the neutering of male dogs.

Male dogs should not be held in shelter care awaiting neutering, unless there is a good reason to do so. If neutering is recommended this can be done once in a home- recognising that this is more difficult to guarantee.

Female dog neutering

The medical case for and against

Incidence rates quoted in the WSAVA report[1] suggest that for every four female dogs neutered we could reasonably expect to prevent one to two pyometra, and two to three pseudopregnancies. Interestingly there wasn't mention of the number of unwanted pregnancies prevented.

As welfare charities we have to consider carefully the welfare impact on unwanted puppies and the dams. The situation has changed very considerably from the pandemic period when it was easy to rehome animals and when breeders found it very easy to sell puppies. Shelters are full and puppy abandonment is now increasingly common. Unfortunately because of the nature of this abandonment we do not have information about whether these were deliberate matings, intending to make money by selling the pups and then a problem occurred, or whether they were unintended matings- this information would be very valuable to gather.

For bitches that are used for breeding there are potential issues from dystocia and mastitis as well as potential behavioural concerns associated with confinement around pregnancy and whether they are being used repeatedly for breeding purposes.

Health issues such as vaginal hyperplasia and prolapse are seen in our organisations relatively commonly, particularly in French Bulldog and large bullbreeds. This aligns with the findings of WSAVA "Anecdotally, vaginal hyperplasia has been reported more frequently in young female dogs of Boxer, Boxer cross, and brachycephalic breeds, as well as in large breed dogs". This is a condition that is resolved by neutering at the time.

With regard to the oncological risks, the data again shows implications on decreased and increased risks for certain cancers in certain breeds, but this is far from a clear picture.

The WSVA Guidelines state that intact female dogs have a threefold to fourfold or higher increased risk of developing a mammary tumour and more frequently have multiple tumours compared to gonadectomised dogs. Gonadectomy has been shown to decrease the odds of developing mammary tumours and reduce the mortality rate due to these tumours by about threefold. Again, the incidence

rates quoted in WSAVA would suggest that neutering 2,000 animals leads to one lymphoma whilst potentially preventing 250 mammary tumours.
We noted some particular challenges around treating dogs with mammary tumours in shelters, as prognosis can be hard to determine without biopsy, depending on the type they can result in prolonged length of stay, invasive procedures such as mammary strips and poorer rehomability prospects.

The considerations around orthopedic complications were considered to be similar to those of male dogs, with some specific bred differences. A Guide Dogs study showed that bitches neutered before puberty had significantly more cases of cruciate disease and were diagnosed with osteoarthritis at younger ages than bitches neutered after puberty[19].

The behavioural case for and against

There are some particular issues around having unneutered dogs in the shelter and home setting. While there is less risk of an accidental mating in a shelter, the presence of a female in seasons can cause impacts on other dogs in the shelter. Where there are pairs or groups of female dogs, in either the shelter or home, one risk is inter-female aggression between unneutered female dogs[20]. This can be serious and it can be difficult to repair the relationship, even after neutering.

There was a recognition that a neutered female is easier for new owners to manage- not having to deal with the dog being in season with the limitation on exercise and boarding and dealing with unwanted attention from male dogs. There is also a potential welfare impact for bitches in season in terms of potential restriction on exercise, albeit for relatively short periods

The WSAVA Guidelines conclude that the impact of gonadectomy (neutering) on behaviour in female dogs is a complex and controversial issue, with studies often yielding conflicting results. They noted “a relationship between prepubertal gonadectomy and anxiety/lack of confidence and a general increase in behavioural problems following gonadectomy have been described in female dogs in several studies[11,14]. There is a particular concern for shelter animals who may be less resilient due to their previous experiences. However, this was not found in other papers, Moxon et al [21] suggest that, for Labrador and Golden Retriever crossbreed bitches, neutering before or after puberty has little to no effect on future behaviour

Again it was noted that the experience of surgery is important[17,18] and as well as painkillers there may be a role for appropriate situational medications which have been shown to reduce the behavioural signs of stress in hospitalised patients[22].

The population case for and against

Control of the dog population has always been a strong argument for the neutering of female dogs. TNR programmes remain a mainstay of population control across the globe. However, the UK population issue is more complicated where much breeding is deliberate and, at least until very recently, there has been a “shortage” of suitable dogs. A situation that has contributed to issues such as the importation of overseas “rescues” to meet demand, with significant behavioural consequences for many individuals and concerns around the importation of diseases such as Brucella Canis.
While recognising the need for a sustainable supply of well bred dogs, it is very important that breeding takes place between healthy and temperamentally sound dogs.
We know from other species that maternal care has a significant impact on the subsequent behaviour of offspring[23] and our experiences suggest that the same occurs in dogs.

Sadly, the rehoming centre population is made up of many dogs who have not experienced good lives, have often been poorly bred themselves and a substantial proportion have health issues. Many are of less desirable breeds, or breeds less suited to home life. There is therefore a strong argument that we should ensure these dogs are not bred from.

There is a challenge for charity organisations as we do not know what the risk of pregnancy is if we stop neutering, we have always neutered. We would therefore need to ensure robust follow up on any dogs where we rehomed them unneutered. This requires further resourcing- but it could be something to consider.

While we can design rehoming processes to warn about the dangers of unwanted pregnancy we do not have the data and insights to judge who will be “responsible” if we rehome neutered dogs to them. Asking shelter colleagues to make decisions about who will be responsible in these scenarios places a further time and moral responsibility on them. There is a risk that this sort of questioning may go against efforts to make adoption processes less judgemental and smoother.

PDSA’s own high level data around age at death showed neutered females live 24% longer, in alignment with other studies. Again there will be other variables at play.

The resource case for and against

There is a significant resource impact of spaying bitches for organisations in both time and money and delays to rehoming while waiting for neutering slots impacts the welfare of the individual animal and the throughput in the shelter, limiting the number of animals charities can rescue/ rehome. Ensuring that where we are using external vets we are clear on our priorities is important.

We all agreed that we needed to encourage vets to spay and perform other procedures e.g. dentals, lump removal at the same time where appropriate. This is aligned with the WSAVA position. Obviously there can be risks associated with this, but these have to be weighed up against the impact on length of stay in the shelter, periods of repeated restrictions, being given medication, repeat clinic visits etc. Obviously it is not always going to be appropriate to perform two procedures together, especially if the anaesthesia will be very prolonged. We would ask vets to consider the bigger welfare and shelter throughput situation and practice contextualised care in this matter.

Optimal timing of neutering in relation to the stage of oestrus cycle

Deciding when to neuter females is more complicated in the shelter setting, the history of when the dog was last in season is often not known.
It is preferable to avoid neutering during the period of high progesterone. When highly stressed and spayed during false pregnancy, the symptoms of that false pregnancy can be prolonged, including behavioural symptoms such as increased anxiety, even aggression[24]. There were some differences in opinion around how much of an issue this is and is an area where more data would be valuable. This could help inform decisions about using more vaginal cytology, for example.

Most, but not all, organisations would neuter pregnant dogs where appropriate, recognising that the outcomes for puppies born in shelters to stressed mums may be very poor. There are exceptions to this when suitable facilities are available or good quality foster care would be available and this relied on careful case selection relating to the temperament of the dam and the breed of dog.

Use of non-surgical alternatives in the charity sector.

There have been a small number of situations where non-surgical alternatives have been used. Caution was advised about using these to “test” the impact on the dog of neutering, especially in young dogs as initially a high testosterone level is seen. The later the same hormone deficit occurs that can have a detrimental effect on fearful dogs during adolescence.

The length of stay for most shelter dogs means that benefits are unlikely to be seen and the follow up required is unlikely to be suitable for shelters scenarios,

Conclusions:

It was clear from the discussion that while the WSAVA paper is a useful resource there are many additional charity/ shelter contexts and that data is lacking in some of these areas.

This is definitely not an area where we could have clear answers on all the questions by the end of the day- unfortunately.

In terms of general recommendations we were able to agree that blanket neutering of male dogs was no longer the default position. That there needs to be a wider awareness of the pointers and flags to help recognise dogs who could be detrimentally impacted by neutering.

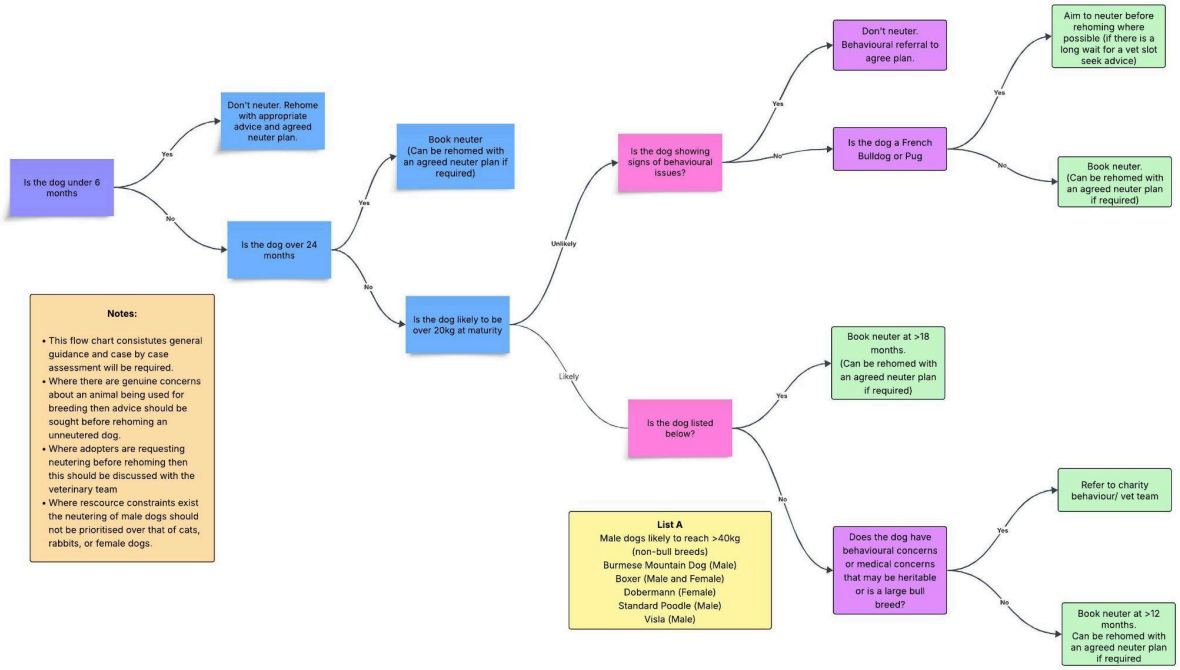
In the face of “problem male behaviours” we identified the need for more resources to help owners so that they don’t feel the need to jump to neutering as “the solution”.

There were a degree of views across the room about where the line should sit on neutering, one which was as much dependent on the resource constraints of the organisations as other considerations. Where there were more restraints it was felt that male dog neutering would not be a priority and if this means dogs are being rehomed unneutered that would be acceptable.

In relation to the timing for male dogs there were some different views. All agreed that dogs should not be neutered before 6 months, some organisations favouring a blanket delay until maturity (>12 months) others would delay only for dogs >20kg, or only for certain breeds based on the orthopaedic issues.

In relation to female dogs it was felt, on balance, that neutering of our cohort of animals was overall still a net benefit, this is mainly because of the need to consider the wider impacts such as adverse outcomes of unwanted pregnancy. We recognise the need to continue to monitor the research in this area and also understand population impacts if neutering becomes less important in the owned animal population.

In relation to the timing for female dogs there was agreement on delaying neutering beyond 1 year for dogs of >20kg and a further delay for giant breed/ breeds at higher risk of orthopaedic problems. This would mean rehoming dogs unneutered and we recognise the need to follow up closely on the outcomes of this.



Ultimately this is an issue of contextualised care. There is no longer a simple one sized fits all approach and it is important that vets working with charities set aside time to understand their particular contexts and come up with an agreed position on neutering, referring to any available charity policies and reaching out to the charity's own vets, where they exist.

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