

The DNA Expansion Programme: reporting real achievement?



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In January 2006, the Home Office released a report on the police National DNA Database (the NDNAD).¹ The report claims that the DNA Expansion Programme, which began in 2000, has been a major success. The Programme has involved changes in the law in England and Wales which now allows the police to routinely take DNA without consent from anyone arrested in connection with any recordable offence: including being drunk and disorderly, begging or taking part in an illegal demonstration. All DNA samples are kept permanently by the companies that analyse them, and the DNA profiles and personal data (such as name and ethnic group) are also kept permanently on the computer database, even if a person is never charged or is acquitted.^{2,3} These changes have been controversial because of the concerns they raise about privacy and human rights.

Plans are underway to introduce a similar law in Scotland, and this is likely to be debated shortly in the Scottish Parliament.⁴ An amendment to the Police, Public Order and Criminal Justice (Scotland) Act is expected to be proposed within the next few weeks by the Ministerial Parliamentary Aide to Scotland's Lord Advocate.⁵

Scotland has its own DNA Database, but around 3,500 DNA profiles from individuals and 300 DNA profiles from crime scenes are exported to the National DNA Database in England every month.⁶ The number of DNA profiles exported annually to the Database in England has almost doubled from 26,487 in 1999 to 49,641 in 2005.⁷ However, the law in Scotland currently requires DNA profiles taken from people who are not convicted to be deleted from both the Scottish DNA Database and the National DNA Database and the samples to be destroyed.⁸ As a result, 29,334 DNA profiles were deleted in 2005.⁹ The police liaison officer for the Scottish Police DNA Database has expressed concerns that blanket retention of DNA could reduce public support and that "*It is arguable that the general retention of profiles from the un-convicted has not been shown to significantly enhance criminal intelligence or detection*".¹⁰ Evidence of the benefits of retaining all DNA profiles permanently on the Database, as well as the potential threats to privacy and human rights, is therefore highly relevant to an imminent political decision by the Scottish Parliament.

Therefore, GeneWatch UK has serious concerns that the recent Home Office report – and the way its figures have been cited - is potentially misleading in a number of respects concerning the contribution of the DNA Expansion Programme to criminal intelligence in England and Wales. This briefing first outlines the potential dangers and benefits of the Database and then considers the extent to which the new Home Office report informs the debate.

1. What are the potential dangers of the Database?

The National DNA Database is a useful tool in criminal investigations, but the permanent retention on it of everyone who has been arrested raises important concerns about privacy and rights, including:

- the potential threat to 'genetic privacy' if information is revealed about health or family relationships, not just identity;
- the creation of a permanent 'list of suspects' – including anyone arrested in England and Wales since April 2004 - that could be misused by governments or made available to a much wider range of organisations in the future;
- the exacerbation of discrimination in the criminal justice system;
- the use of the computer database and perhaps the DNA samples for genetic research without consent.

Some of these concerns have been highlighted by recent revelations that the Database now contains the DNA profiles of:

- 124,347 people who have been arrested and subsequently not been charged or cautioned with an offence;¹¹
- 24,000 juveniles (people under 18) who have never been charged, convicted or cautioned;¹²
- more than a third of black men in the UK population.¹³

The debate about the DNA Expansion Programme therefore involves an important discussion about how to balance the benefits of the Database in tackling crime against the threats to civil liberties. An informed debate requires an understanding of the role of the Database and the contribution of *the permanent retention of DNA profiles and DNA samples from individuals* to detecting and preventing crime.

2. What are the benefits of the Database?

It is important to distinguish clearly between the role of DNA in a specific criminal investigation and the role of the DNA Database. DNA databases are not required to provide evidence of guilt or innocence when there is a known group of suspects for a crime - a DNA sample can be taken from each individual and the DNA profile (a string of numbers based on specific areas of each individual's DNA) can be compared directly with a crime scene profile. There is little cause for concern in using DNA samples in this way and there can be significant benefits to criminal investigations. In practice, these comparisons are made using the Database – by entering both the crime scene profile and the suspect's profile on it. However, looking for a DNA match for a known group of suspects for a specific crime does not *require* a database: in particular it does not require DNA profiles to be *retained* after an investigation is complete.

However, the retention of DNA profiles and samples taken from *crime scenes* on the Database can readily be justified because they might be useful if an investigation needs to be re-opened in the future (either to convict a perpetrator, or to exonerate an innocent person). Therefore, concerns about the DNA Expansion Programme relate to the widening of the group of *individuals* (not crime scene samples) from whom DNA can be taken and then *kept permanently* on the database.

The purpose of *entering* an individual's DNA profile on the Database is to see if they are a potential suspect for a *past* crime. This may include a crime they have been arrested

on suspicion of committing, if DNA evidence has been collected from that crime scene, although this type of comparison does not require a database. However, the search will also include any unsolved crime for which a DNA profile is stored from any past crime scene. Because DNA is taken from only a small proportion of crime scenes, and for only some types of offences, in most cases the DNA taken from an individual on arrest is only relevant to other past crimes, not to the offence for which they have been arrested. The value of the database is in providing 'cold hits' (unanticipated matches between a crime scene DNA profile and an individual's DNA profile), which use the Database to introduce a new suspect into an investigation. The purpose of *entering* increasing numbers of DNA profiles on the Database (unrelated to the reason for arrest) is that it may allow investigation of a *past* crime to be re-opened, by identifying a new suspect.

The purpose of *retaining* an individual's DNA profile on a database is to treat them as suspects for any *future* crime. This is arguably likely to be of most benefit when an individual has a record as a 'career criminal' and is considered likely to re-offend (or, perhaps, to be deterred from re-offending by the retention of their profile). However, it is also possible that a previously innocent person subsequently commits a crime and is identified because their DNA profile is already on the Database.

Although DNA can undoubtedly be useful to exonerate the innocent, a *database* of individual DNA profiles (as opposed to crime scene profiles) is *never* necessary to exonerate an innocent person, since this can always be done by comparing the DNA profile of the innocent suspect directly with the crime scene DNA profile. The 'added value' of putting individuals on the Database is only to introduce *new suspects* into a past or future investigation, not to exonerate the innocent. This depends on the number of 'cold hits' (unanticipated DNA matches) and the extent to which these matches lead to successful prosecutions.

3. What information is needed to inform the debate?

GeneWatch UK has previously suggested that there are important changes that can be made to safeguard privacy and rights without compromising the use of DNA in fighting crime². These include:

- a public debate about who should be on the Database and for how long. The aim should be to develop a policy of time limits on the *retention* of people on the Database, related to the seriousness of the offence and whether a person has been convicted (similar to the system used for the Police National Computer, which holds people's criminal records^{14,15}). A policy on retention would limit the potential for future governments to misuse the data to restrict people's rights and freedoms;
- destroying individuals' DNA *samples* once an investigation is complete, after the DNA profiles used for identification have been obtained. This would limit the potential for personal genetic information to be revealed in future, as science, technology and new policies develop;
- an end to the practice of allowing companies to undertake controversial genetic research using the Database (which has included attempts to link DNA profiles with ethnicity). This practice breaches ethical requirements for informed consent to genetic research;
- a return to the previous policy of taking DNA on charge, rather than arrest, except when the sample is needed to investigate the specific crime for which a person has been arrested. This would reinstate an important safeguard against the collection of DNA profiles reflecting discriminatory policing;

- the creation of an independent, transparent and accountable governing body.

Taking and retaining more profiles, especially for long periods of time, increases the potential for misuse by future governments, but may also increase the number of solved crimes. However, if the benefits to criminal investigations are limited, it may be harder to justify the potential dangers. Four unanswered questions are therefore important to the current debate:

- (i) What are the benefits to criminal investigations of taking DNA profiles on arrest, rather than on charge (except when the DNA is needed to investigate a specific offence)?
- (ii) What are the benefits to criminal investigations of retaining all DNA profiles from individuals permanently, rather than setting time limits on retention (related to the seriousness of the offence and whether the individual has been convicted or not)?
- (iii) What are the benefits and costs of retaining all individuals' DNA samples permanently, after the DNA profiles have been obtained from them?
- (iv) How well is the Database being controlled and managed?

The next section explores the extent to which the Home Office report addresses these important questions.

4. The Home Office Report: interpreting the evidence.

The new Home Office report provides a lot of information about how many DNA profiles are on the Database; what proportion of crime scenes provide DNA evidence; how many DNA matches and 'detections' occur; and costs. However, some information is also missing and/or there are difficulties interpreting it. Before looking at the evidence, this section explains what is meant by a DNA match, a DNA detection, the DNA detection rate, and the role of the Database in different types of crime.

Box A describes the difference between DNA matches, DNA detections (not all matches lead to detections) and convictions.

Box A: DNA matches or detections?

DNA matches indicate that the DNA profile of an individual on the Database matches a DNA profile taken from a crime scene. Provided the samples have not been contaminated or mixed up and the DNA is not degraded (so that a full profile can be obtained) this indicates a very high probability (although not certainty) that the DNA at the crime scene came from that individual.

Detections are crimes that have been recorded as 'cleared up' by the police. This includes crimes where a person has been charged, cautioned or warned, and some crimes that are not proceeded against (for example, because the victim is unwilling to give evidence). For charges to be brought, additional evidence is always needed (for example, from witnesses) to show that the individual may have actually committed a crime. This is because the DNA from many different people can often be found at a crime scene and many of them will not have been there when the crime was actually committed, or may not have been involved in it. For example, they could be someone who is a friend of the owner of a burgled house, or a mechanic who has worked on a car that has been stolen, or even someone who has had their DNA planted at the scene.

Therefore, only about half of the DNA matches made lead to **DNA detection**. In 2004/05, 49% of matches led to a detection, although this figure rose to 58% in a smaller but more detailed evaluation study (p12 and para 41, p15 of the Home Office report). This conversion rate (of matches to detections) is largely determined by volume crimes (such as burglary) and may not apply to different types of offences.

However, not all DNA detections lead to **convictions** because if DNA evidence and other evidence is considered sufficient for charges to be brought, this does not necessarily mean that a person is guilty. The Home Office report does not give any figures on convictions, however it has estimated in the past that some 50% of detections lead to convictions and some 25% lead to a custodial sentence.¹⁶ Roughly speaking, then, eight DNA matches lead to four detections and two convictions, one of which will involve a custodial sentence. Again, this is an average figure that does not apply to all types of crime.

Although DNA detections provide a much better indication of whether a suspect has been identified than DNA matches do, they still not provide a very useful measure of the value of the Database in criminal investigations. This is because matching DNA from an existing suspect to a specific crime does not require a database – the added value of the Database is only in providing *new* detections. New detections are those for which the Database was the first clue that the individual may have committed the crime – i.e. detections which result from 'cold hits' (unanticipated matches). Only just over half of DNA detections are new detections (see Box B) but again this figure is mainly determined by volume crime and may not be relevant to other types of crime. Even new detections do not necessarily measure the value of the Database, because further police work (which is anyway necessary to secure a conviction in court) may also have identified the suspect without needing the Database. In addition, the proportion of new detections which lead to convictions may also be smaller, because this additional evidence is less likely to exist for 'cold hits' than for crimes where the individual has already been identified as a suspect.

Box B: The benefits of DNA or the benefits of the Database?

The figures for DNA detections do not show whether or not the individual was first identified as a suspect for the crime through use of the Database, or was already a suspect when they were entered on it. This is an important distinction because the 'added value' of putting DNA profiles from individuals on a Database (as opposed to the use of DNA in crime investigations) is only its contribution to *new* detections (or 'cold hits' leading to a detected crime), not to detections between an existing suspect and a crime scene (which do not need a database of individuals).

For the first time, the Home Office report includes a figure distinguishing between these types of detections. A research exercise carried out in 2002/03 that followed 620 cases involving DNA matches found that in 58% of all detected cases, the DNA match was the first link to the offender (para 41, p15 of the Home Office report). Although no further information is given about the cases studied, it is likely that most were volume crimes, such as burglaries and thefts (see Box D).

It is also important to be clear about the meaning of the *DNA detection rate*, which does not represent the proportion of crimes detected using DNA (Box C). Much less than 1%

of all crimes are detected using DNA, because DNA is not available from most crime scenes.

Box C: The DNA detection rate

In 2004/05, the overall crime detection rate was 26%, but when a crime scene DNA profile was added to the Database the detection rate rose to 40% - the DNA detection rate (para 48, p16). This comparison is useful for the police because it shows that adding a crime scene DNA profile to the database increases the chances of a crime being detected, at least for the volume crime categories shown on page 16 of the report (burglary and thefts from or of vehicles). However, it can also be misleading because the DNA detection rate is not the proportion of crimes detected using DNA, which is in fact very small.

The **overall detection rate** is the number of detected crimes divided by the number of recorded crimes: this is the proportion of crimes that are detected in a given year (26% in 2004/05). The **DNA detection rate** is the number of DNA detections divided by the number of cases where a DNA profile from a crime scene was loaded. This measures the proportion of crime scene profiles which led to a detection (40% in 2004/05). The **proportion of total crimes detected using DNA** is, however, much lower, because crime scene DNA profiles are entered on the Database for less than 1% of all recorded crime.

For example, in 2004/05 there were 5.6 million recorded crimes (p12), of which 913,717 (16.2%) had a crime scene examination (paras 21&23, p9), leading to 49,723 crime scene DNA profiles being added to the Database. DNA profiles were therefore loaded from only 0.88% of crime scenes. As 40% of these were reported as detected, this implies that only 0.35% of crimes were detected using DNA. Despite the rapid expansion of the Database, this is the same percentage of crimes that were detected using DNA in 2002/03 (when there were nearly 6 million recorded crimes and 21,082 DNA detections).¹⁷ This number is also an overestimate of the value of the Database, because only about half of these detections are likely to be new detections (i.e. the first link between the suspect and the scene of crime: Box B) and many of them will not lead to convictions.

Interpreting the figures is also complicated by the fact that DNA evidence, and the Database, have varying contributions to make to different types of crime (Box D). Although public awareness of DNA in criminal investigations focuses largely on high-profile cases, such as murders, the Database has much more impact on volume crimes, such as burglary.

Box D: The role of DNA in different types of crime

Prior to 2000 (when the DNA Expansion Programme began), many police forces did not collect DNA for volume crimes such as car theft, and rates of DNA collection for burglaries were often low. However, the proportion of DNA detections is much higher for these volume crimes (p15/16 Home Office report) and the value of using the Database is greater. The main reasons for this are: (i) detection rates have historically been low for crimes such as burglary (para 48); (ii) the identity of the suspect is often unknown, so a 'cold hit' from the database can provide an important lead for an investigation (para 50).

The Database (as opposed to the use of DNA evidence in court) is much less effective for violent crimes because:

- Most murderers, rapists and perpetrators of violent crimes such as assault are known to their victims. This means that although DNA evidence can sometimes be an important part of the evidence in court, the Database is not usually necessary to identify a list of suspects.
- The most useful DNA in murder investigations is often the victim's DNA, not the perpetrator's – for example, scientists might examine blood stains on someone's clothing to see if they came from the victim. Whether the suspect's DNA is on the Database, or not, is not relevant to this comparison.
- In some types of cases – such as rape – there is often no disagreement about identity (i.e. the man involved) but a disagreement about whether a crime has taken place (whether the woman has given her consent). DNA can help solve disputes about identity, but not about consent.

Although the Home Office report includes figures for total crime and volume crime, it does not provide a detailed breakdown for other types of crime. The figures for DNA *matches* are available for violent crimes in 2003/04 (including 428 rapes, 152 murders or manslaughters, 199 attempted murders, 150 other sexual offences and 14 suspicious deaths) and are much smaller than for volume crimes (for example, there were 8558 matches for burglary in 2003/04).⁶ However, no figures are given for detections, convictions, detection rates, or the proportion of detections which are new (i.e. that may have needed the Database). These are all expected to be much lower than for volume crime (paras 48 to 50, p16). It is therefore impossible to assess the value of the Database in solving these types of crime.

Finally, it is important to consider how useful the Database could be in theory, if all relevant crime scenes were examined for DNA and the whole population was on the Database (Box E).

Box E: How useful could a larger DNA Database become?

The number of cases that can be solved using DNA will always be limited by the number of crime scenes from which DNA profiles can be collected and the need for corroborating evidence. The number of DNA crime scene profiles loaded on the Database has increased significantly during the DNA Expansion Programme, but is unlikely to increase much further because many types of crime do not have an obvious 'crime scene' and DNA is not left at all crime scenes (paras 22 and 23 of the Home Office report). In 2003/04 the number of crimes yielding DNA either levelled off or decreased (para 26, Home Office report). It is therefore unlikely that DNA profiles are ever loaded from more than 1% of crime scenes (Box C). In theory, if everyone was on the Database, the DNA match rate (number of DNA matches per crime scene sample) could increase to 100% (assuming nobody escaped entry on the Database). However, the DNA detection rate (or conviction rate) would never be this high, because all matches will not lead to detections (or convictions).

Currently, about half the matches made lead to detections, so it may not be realistic to expect the DNA detection rate to increase to much more than 50%, even if everyone

was on the Database – this suggests that, at most, an expanded Database has the potential to detect perhaps 0.5% of crimes (compared to 0.35% today). Most of these would be volume crimes (such as burglary) and only about half of them would have *required* the Database (i.e. might result from ‘cold hits’).

Currently, the DNA detection rate is about 40% and has not noticeably increased as the number of individuals on the Database has expanded (see also Section 5.1). The proportion of recorded crimes detected using has also remained fixed at approximately 0.35% for the last three years. This suggests that there is a rapidly diminishing return from adding more individuals to the Database and that a 50% DNA detection rate may be very difficult to reach. This probably reflects the evidence that in Britain about 100,000 people are responsible for almost half of all crime.¹⁸ Keeping persistent offenders on the database can clearly help to identify them should they re-offend. However, adding large numbers of innocent people to the Database does not make much difference to the DNA detection rate because the chances of them committing an offence is very low.

5. The Home Office report: answering the questions?

GeneWatch agrees that the National DNA Database is a useful tool in tackling crime, but believes it is important to be clear about the relative benefits and disadvantages of the three major changes that have taken place as part of the DNA Expansion Programme. These changes are:

- A change in practice in 2000 that meant that the police started collecting much more DNA from scenes of volume crime (such as burglary and car theft);
- A change in the law in England and Wales in 2001 that meant DNA profiles from people who had been charged but were subsequently acquitted or not proceeded against could be *permanently retained*. Although this affected the number of profiles retained, it is unclear the extent to which the existing law (which required the records to be removed) had been implemented prior to this date (an estimated 50,000 profiles may have been kept illegally on the Database before the law was changed¹⁹).
- A change in the law in England and Wales in April 2003 which came into effect in April 2004, that meant DNA was collected on arrest rather than on charge. This affected both the numbers of individual profiles *entered* and the numbers permanently *retained*.

The aim of putting more crime scene DNA profiles on the Database is to increase the number of crimes detected. The aim of entering and retaining more individuals’ DNA profiles on the Database is to increase the number of crimes detected by increasing the *DNA detection rate* (the number of detections per crime scene DNA profile). The DNA detection rate gives an indication of the likelihood of identifying a suspect if a crime scene DNA profile has been obtained (Box C).

When considering the issue of retention, it is important to be aware that, in the past, administrative delays could mean that a person’s DNA profile was removed before it had been compared with all *past* crime scene samples. This gave rise to an administrative anomaly, that might mean that a match with a past crime scene DNA profile was not made when it should have been (Box F).

Box F: Past or future crimes?

The Home Office report claims (p15&16) that serious offenders are often caught because they are picked up *later* for a relatively minor offence. However, there is an important difference between using the Database to check whether someone has committed a *past* crime and keeping them on it permanently in case they commit a *future* one.

One of the cases used to justify the permanent retention of DNA profiles from people who have been acquitted was the case of R v. B (para 14 of the Home Office report). This was the case of a man who was charged and acquitted of a burglary, but whose DNA profile also linked him to a violent rape, committed some months before. His conviction for the rape was quashed by the Court of Appeal, on the grounds that the DNA match for the rape was made after he had been acquitted for the burglary, by which time his profile should have been removed from the Database. However, this reflects an administrative problem (failure to complete the checks for matches with *past* crimes), rather than a need to retain all profiles permanently to check for *future* crimes. This type of problem should no longer arise because DNA profiling has now been speeded up so that it takes less than 2 weeks (para 77, p24).

The Home Office report also fails to mention that the House of Lords later ruled that the Court of Appeal had been wrong in law to quash the conviction in this case (and that in another case: R v. Weir)²⁰.

5.1 Are DNA detections increasing or decreasing and why?

*“Evaluation of the Programme has shown that the number of matches obtained from the Database (and the likelihood of identifying the person who committed the crime) is ‘driven’ primarily by the number of **crime scene** profiles loaded onto the Database”.*
Home Office (2006), para 32, p10.

Although the number of DNA detections has increased significantly since the DNA Expansion Programme began in 1999/2000 (when there were 8,612 DNA detections), the number of DNA detections peaked in 2002/03 (at 21,098) and then *fell* to 20,489 in 2003/04 and 19,873 in 2004/05 (para 38, p12 of the Home Office report, and the graph on p20). DNA matches also fell (para 36). The Home Office argues that this is because there were fewer crimes and therefore fewer crime scene visits and less *crime scene* DNA loaded, leading to fewer matches (para 37). This is confirmed by calculating the percentage of recorded crimes detected using DNA, using the table on p12. This percentage has been nearly constant for the last 3 years, at 0.356% in 2002/03, 0.339% in 2003/04 and 0.355% in 2004/05, despite the rapid expansion of the number of individuals on the Database.

However, this indicates that it is the number of *crime scene* DNA profiles added to the Database, not the number of individuals’ profiles retained on it, that is largely determining the number of detections. This is confirmed by comparing the *DNA detection rate* (Box C) with those from previous years. The DNA detection rate (DNA detections/cases where DNA scene sample was loaded) has remained more or less constant for the years where figures are available: 38% in 2002/03¹⁶, 43% in 2003/04 and 40% in 2004/05 (p16), whereas the number of individuals’ profiles kept on the Database has expanded rapidly during this time (from 2,099,964 in 2002/03¹⁶ to 2,526,410 in 2003/04 and 3,000,949 in 2004/05). This implies that detections have gone

up because more crime scene DNA profiles have been loaded, not because there have been more detections per crime scene DNA profile. If adding or keeping more DNA from individuals (rather than from crime scenes) was important, the DNA detection rate would have increased as the Database expanded.

5.2 Has taking DNA profiles on arrest and keeping them permanently, been beneficial?

In 2001, the law in England and Wales was changed to allow DNA profiles taken from people who had been *charged* to be *permanently retained* even if they were not convicted. In April 2004, a second legal change came into force that allows the police to take DNA samples without consent on arrest, rather than charge. Prior to this, the police could take some DNA samples on arrest, but only if they needed the DNA to investigate the specific offence for which the person had been arrested. Because of the 2001 change to the law, all these DNA profiles are also retained permanently.

This raises two issues:

- (i) Should DNA be taken on arrest rather than charge (except where needed to investigate a specific offence)?;
- (ii) Should all these DNA profiles be kept permanently on the Database?

The second issue is the most controversial because it creates a second permanent 'criminal record' for everyone who is arrested. However, the first issue also raises concerns because it may exacerbate problems with discrimination, since there is less oversight over decisions to arrest than decisions on who to charge. In Scotland, the police can already take DNA samples from anybody they have arrested or detained on suspicion of committing an imprisonable offence. The current issue for debate by the Scottish Parliament is, therefore, only the merits of *permanent retention* of these DNA profiles on the National DNA Database (and also whether the original DNA samples should also be retained – see Section 5.4).

The Home Office report (para 15, p6) estimates that approximately 198,000 profiles that would have previously been removed have been retained on the Database since the law on *retention* changed in England and Wales in 2001. Of these, at 31 March 2005, 7,591 profiles had been *matched* with crime scene profiles involving 10,754 offences, including 88 murders, 45 attempted murders, 116 rapes, 62 sexual offences, 91 aggravated burglaries and 94 of the control of supplied drugs. However, there are a number of uncertainties with these figures because:

- They are an *estimate*, because the number of profiles that should have been removed is unknown, due to the fact that prior to 2001 the existing law was not properly implemented.
- No information is provided about the number of *detections*, how many of these are *new detections* (i.e. may have required the individual's profile to be retained), or how many led to prosecutions or *convictions*. For violent crime, no figures are available to estimate the proportion of DNA matches that are 'cold hits' or that lead to detections or convictions.
- In addition, it is unclear whether the matches all relate to future crimes (crimes committed *after* the individual's profile was obtained – which would benefit from the *retention* of their DNA profile) or to past crimes where the crime scene DNA had simply not been analysed in time (Box F). It is also unclear whether a shorter period of retention would be sufficient to obtain these matches.

Importantly, these figures have also been misinterpreted. For example, an article by the Chief Constable of Lothian and Borders Police has stated: “*The most compelling argument for a change in the law [in Scotland] is that it will help us catch criminals. This isn’t some kind of theoretical forecast – we know from Home Office statistics that since 2001, when the law changed in England and Wales, police forces have solved 10,000 offences using DNA that under the current law in Scotland would have to be destroyed. This includes 88 murders, 45 attempted murders, 116 rapes, 62 other sexual offences, 91 aggravated burglaries and 94 offences of the supply of controlled drugs*”²¹. The claim that these crimes have been solved as a result of the change in the law is clearly wrong – these are the figures for DNA *matches*, not detections, new detections or convictions. No figures are available on whether any of these matches have led to prosecutions or convictions.

There is even less evidence about the extent to which the April 2004 changes – which allow the permanent retention of all profiles taken on arrest – have led to prosecutions or convictions. The table on p7 indicates that the Database contained 113,000 arrestees in 2004/05. Although the term “arrestees” is not defined this appears to be people who have been arrested but subsequently not charged with any offence.¹³ The Report states (para 18, p7) that sampling arrestees who are not proceeded against has yielded over 250 DNA profiles of individuals that have been linked with crime scene samples from past offences. This figure is based on 12 police forces that had implemented the change, although the time period is not stated (by April 2005, 33 forces had fully implemented the change and 10 forces had partially implemented it – para 17, p7) . The word ‘linked’ seems to imply DNA *matches* rather than *detections* (Box A) and corresponds to only 0.02% of the number of arrestees (113,000), however this may be an underestimate because not all police forces were included.

Although this match rate is very low, it is nevertheless possible that some crimes have been solved as a result. The report names 120 of these past 250 offences for which matches have been obtained: four murder/manslaughters, three rapes, six robberies, four sexual offences, five of the supply of controlled drugs and 98 burglary offences. However, any implication that these crimes have been solved is misleading. The report does not give numbers of ‘detections’, whether these detections were new (i.e. needed the Database), or any indication of proceedings or convictions in these cases. Because only about 1 in 4 matches are new detections (see Boxes A and B), and the Database is much less effective for violent crime than volume crime (Box C), based on these figures it is extremely questionable whether this new policy has helped to solve *any* violent crimes, although it may have helped contribute to some new detections for burglaries. Further, it is unclear whether these DNA matches relate to *past* crimes (committed before arrest) or to *future* ones (committed later) – only the latter can be used to justify *retention* of the profiles.

However, after the Home Office report was published (on 4th January 2006), Baroness Scotland (Minister of State at the Home Office) gave some different figures to the House of Lords (on 25th January 2006). She stated; “*Early research has shown that sampling persons who are arrested but not proceeded against has yielded a match with a crime scene stain in over 3,000 offences. We have been able to detect 37 murders or manslaughter, 16 attempted murders, 90 rapes and 1,136 burglary offences*”.²² This research, which presumably reflects more recent data than the Home Office report, has not been made available for public scrutiny. It presumably refers to people who are arrested but not charged (rather than people who arrested and charged, but not

prosecuted or cautioned) but this is not made explicit. Although this statement reports *matches* for offences overall, it names 1,279 *detections* for different types of offences. The figures on matches have been repeated by ministers several times but no further reference has been made to the number of detections. No information has been provided about whether these are new detections, whether they led to convictions, or whether they relate to crimes committed *before* or *after* the individual was arrested. Again, only the latter are relevant to a decision on whether DNA profiles should be *retained*.

These figures also appear to have been misrepresented during the debate about the database. John Denham MP (Chair of the Home Affairs Select Committee and a former Home Office minister) stated on Newsnight (on 31st January 2006) that "...13,000 or so crimes have been detected, including over 500 things like murders, serious rapes and serious assaults on the basis of database information on people who have not been convicted of a crime". This figure does not appear in the Home Office report. Presumably it includes people arrested but not charged as well as people charged but not convicted. However, this figure seems implausible because it implies that nearly all DNA matches lead to detections. It appears to represent the number of *matches* (i.e. the sum of the 3,000 matches reported by Baroness Scotland for arrestees, plus the matches for 10,752 offences obtained from people retained but not convicted), not the number of *detections* and, if so, is seriously misleading.

In general, Home Office ministers have focused on DNA matches, rather than detections or convictions and seem unable to quantify the claimed benefits of significantly expanding the number of individuals retained permanently on the Database. For example, on 1st February 2006, Home Office Minister Andy Burnham MP was asked how many of the 24,000 DNA samples taken from children under 18 years who were never cautioned or charged were subsequently used successfully to prosecute a crime. He replied: "*Information on the number of DNA profiles used successfully to prosecute a crime is not collected by the Home Office, but information is available on the number of such profiles which have been used to assist crime investigations. It has been established that to date 541 DNA profiles of the 24,168 DNA profiles taken from persons under 18 years who had not been charged or cautioned for an offence have subsequently been 'matched' to DNA recovered from unsolved crime scenes stored on the National DNA Database, providing the police with key intelligence leads on the possible identity of the offender and assisting crime investigation and detection*".²³ Again, no information was provided on how many matches were 'cold hits' and how many led to detections or convictions. Despite the lack of evidence on successful prosecutions, the figures on matches – for both children and adults - have repeatedly been used by ministers to justify the changes in the law²⁴ and have also been misreported as 'solved' crimes.²⁵

In 2005, the House of Commons Science and Technology Committee stated that the recent expansion of the Database "*would make a review of the impact of the NDNAD on the detection and deterrence of crime timely*"²⁶ and in its response the Government referred to the (then forthcoming) Home Office report.²⁷ However, the Report falls far short of the necessary review, because it leaves many of the questions about the impact of the DNA Expansion Programme on crime unanswered. Rather than an independent investigation of the impact of the Database's expansion, the Home Office has published a self-justification of its own Programme, which does little to inform the debate.

5.4 Has the DNA Expansion Programme been cost-effective?

Although the Database can increase the number of detections, and potentially convictions, it has long been recognised that the costs need to be weighed against other policing methods, in order to ensure best value. In 2000, Her Majesty's Inspectorate of Constabulary reported huge uncertainty about the costs per match (with estimates ranging from £443 to £13,114) and per detection (estimates from £788 to £2,342), depending on how these costs were calculated.²⁸ Although the Report provides some new figures on the unit costs of *processing* each sample (p24), this sheds little light on costs or cost-effectiveness, because it does not include police time. It also does not include the costs of *storing* samples permanently (see below).

5.4 Has retaining DNA samples been beneficial and what has it cost?

The National DNA Database contains DNA profiles and other information from individuals and from crime scenes, linked to the original DNA *samples* from which the profile is obtained (usually cheek cells taken using a mouth swab). The DNA profiles are a string of numbers based on specific areas of each individual's DNA, known as short tandem repeats (STRs). The DNA samples contain much more genetic information (for example, information about health), raising additional privacy concerns. They remain the property of the police force which collected them but are stored permanently by the companies that analyse them, for an annual fee.

In England and Wales the Forensic Science service (FSS), LGC Ltd and the Forensic Alliance (via Cellmark, part of the US company Orchid Biosciences) are all accredited to analyse individuals' DNA samples and supply profiles to the Database (Forensic Alliance has recently become part of LGC Group). In Scotland, only the Police Forensic Science Laboratories currently act as suppliers of DNA profiles as the Database.²⁹ Scotland exports copies of all DNA profiles it holds to the National DNA Database in England, but does not export the DNA samples.

Retaining DNA samples from individuals is not necessary to avoid miscarriages of justice because a second DNA sample is always taken from someone being prosecuted, to confirm the match with the DNA profile from the crime scene. This second match (not the match on the Database) is the one used in evidence in court. The stored DNA samples are also not used in criminal investigations, because it is the DNA *profile* (stored on the Database) that is used for comparison with a DNA profile from the scene of a crime.

The National DNA Database Board argues that the samples must be kept for quality control and to check errors. However, samples do not need to be kept *permanently* for the profiles to be checked; they could be stored only for a limited time period, until an investigation is complete. The Board also argues that keeping samples allows the Database to be upgraded to use more detailed profiles in the future. Although this was necessary when the Database was first set up, it is likely to be costly and impracticable now it is so large and would also make the Database incompatible with others internationally. It is also always possible to use more detailed profiling on the second DNA sample that is taken from the defendant for use in court. The Government's advisory body, the Human Genetics Commission, has concluded that the reasons given for retaining individuals' samples are "*not compelling*"³⁰ and has argued that samples from those who are arrested but not charged or convicted should be destroyed when a successful profile has been obtained.³¹

The Home Office has recognised that retaining DNA samples is “*one of the most sensitive issues to the wider public*”.³² However, the Home Office report provides no new information to justify the permanent retention of DNA samples, nor any information about storage costs.

In 2005, the House of Commons Science and Technology Committee recommended that: “*Independent research should be undertaken to assess the public attitude towards retention of DNA samples (both from convicted criminals and others), and the evidence of benefits associated with this practice*”.²⁶ However, this recommendation was only ‘noted’ by the Government²⁷, and subsequently has been ignored.³³

6. Governance and oversight

Until recently, the National DNA Database was managed by the Forensic Science Service (FSS) for the Association of Chief Police Officers (ACPO). The Forensic Science Service (FSS) has recently changed status from a trading fund to a Government owned company (GovCo), with a view to possible partial privatisation in the future. The loading of DNA profiles on the National DNA Database and reporting of subsequent matches is still provided under contract by the FSS, but the standard-setting and oversight of the Database is being transferred to a dedicated unit in the Home Office, governed by the National DNA Database Board. The Board includes representatives of the Home Office, ACPO, the Association of Police Authorities (APA) and the Human Genetics Commission (HGC).³⁴ There are also plans (not yet implemented) to create a separate group to advise on ethics.³⁵

The use of the Database for genetic research without consent and without ethical oversight is controversial.²⁶ Research using the Database is supposed to be restricted to the purpose of detecting or reducing crime. However, this has been interpreted broadly by the Board to include research on predicting characteristics such as ethnicity from DNA.³⁶ There is nothing to prevent future research without consent using either the Database or samples, potentially including controversial topics such as searching for ‘genes for criminality’. The Scottish DNA Database does not record the ethnic origin of persons arrested or detained, so Scottish records exported to the National DNA Database could presumably not be used for ethnicity research.³⁷ However, it is unclear how Scotland will retain democratic control over future uses of DNA profiles retained permanently on the Database in England.

7. Conclusions

An important debate is needed about how to balance the benefits of the National DNA Database in tackling crime against the threats to privacy and rights. The Home Office report provides some important new information, but other data is still missing or has been presented (or subsequently cited) in a misleading way.

Overall, the Home Office report makes a good case that the decision to collect more DNA at scenes of volume crime (such as burglaries and car theft) has more than doubled the number of DNA detections made. The Database is much more useful and effective for investigating these crimes than for violent crimes or sexual offences. However, detections were still made using DNA in only 0.35% of all crimes and only an estimated 58% of these were new detections (i.e. they may have needed individuals’ DNA profiles to be entered, and in some cases retained, on the Database). The value of the Database will therefore always be limited by the small percentage of crime scenes

that yield useful DNA profiles (less than 1%) and the need to collect additional corroborating evidence for use in court.

In contrast to the benefits of collecting more DNA from the scenes of volume crime, the Report makes an extremely poor case for *permanent retention* of DNA profiles from everyone arrested. Expanding the number of *individuals* (rather than crime scene profiles) entered and retained on the database has made no noticeable difference to the DNA detection rate (the number of crimes detected per crime scene DNA profile loaded on the Database). This suggests that 'cold hits' leading to detections result largely from retaining the DNA profiles of persistent offenders on the Database, not from including an increasing number of innocent individuals. In fact, the total number of DNA detections *fell* in 2004/05, after the law allowing permanent retention of records from people arrested but not charged was introduced in England and Wales. However, this change in the law has significantly increased public concern about the threats posed to privacy and human rights.

The report does not consider a number of other contentious issues, including whether or not DNA *samples* (rather than just the DNA profiles obtained from them) should be retained; and whether or not the Database should be used genetic research without consent. These are important issues because they increase concerns about potential threats to privacy and rights. The cost of sample storage is also an important factor to take into consideration in any decision about expanding the Database.

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