EP/Ablation Procedures
Procedure Report

NICOR Report for Harefield Hospital
2017-18

This report is based on data extracted on **16 January, 2020**.
Period extracted: **1 April 2014 - 31 March 2019**.
Document prepared on **July 8, 2020**.
NICOR

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1 Data Quality/Completeness

Number of records in 2017-18 = **581**
Number of records after cleaning and removal of duplicates = **581**

1.1 Year on year change in total reported activity

This calculation is intended to highlight major changes in reported centre activity for simple and complex ablations (derived from fields 3.19 and 3.12) – which may be due to under-reporting rather than actual changes in activity. In some cases, large changes may be due to the merger, closure, or opening of centres.

Table 1: Number of ablation procedures

Type	2016-17	2017-18	Percentage change	Definitions
Simple ablation	148	118	-20.3	3.19 = 1 AND 3.12 = 17, 20, 12a-d, 5a
Complex ablation	441	431	-2.3	3.19 = 1 AND 3.12 = 15, 3a, 4a/b, 13a/b, 14a-e

In accordance with ONS guidance, exact data have been suppressed where case numbers are less than 3 and approximate values provided- if applicable- when suppressed values could be derived, to ensure anonymity of patient data.

Definitions:

- *Simple ablations are defined as records for which 3.19 (Ablation attempted?) = Yes AND 3.12 (Ablation procedure) = 1 or more of the following targets, (but no complex targets):*
  - *complete AV nodal*
  - *AVNRT - slow or fast pathway*
  - *accessory pathway*
  - *cavotricuspid isthmus*
- *Complex atrial ablations are defined as records for which 3.19 (Ablation attempted?) = Yes AND 3.12 (Ablation procedure) = 1 or more of the following targets:*
  - *atrial fibrillation*
  - *atrial ectopy/focal atrial tachycardia*
  - *re-entrant atrial tachycardia right sided (not CTI)*
  - *re-entrant atrial tachycardia left sided*
- *Complex ventricular ablations are defined as records for which 3.19 (Ablation attempted?) = Yes AND 3.12 (Ablation procedure) = 1 or more of the following targets:*
  - *PVCs*
  - *VT*
- *If a record indicates both simple and complex targets, the procedure is counted as complex*

1.2 Ablation procedure validation

This calculation is intended to highlight missing or inconsistent entries in the fields relating to whether ablation was performed (field 3.19), and if so what target (field 3.12). These are obviously key fields, yet are sometimes completed incorrectly. We have examined fields 3.19 and 3.12 along with 3.21 "Ablation energy source" and 3.26 ("Ablation success?"), and tried to adjudicate whether ablation was actually performed (hence column headings: "Ablation", "No ablation" and "Unclear"), and whether the four fields are complete and consistent.

Table 2: Validation of ablation procedures

Data fields 3.12, 3.19, 3.21, 3.26	Ablation	No Ablation	Unclear
Data complete/consistent	447 (80.7%)	< 3	0
Data incomplete/inconsistent	107 (19.3%)	18 (90%)	7
Total	554	< 22	7

Exact data have been suppressed where case numbers are less than 3 and approximate values provided- if applicable- when suppressed values could be derived, to ensure anonymity of patient data.

The exact logic used to derive Table 2. is complex but can be forwarded on request. But, for example,

- *If in a record, 3.19 (Ablation performed) = "0. No" yet other fields state that there was an ablation energy source, a target, and a degree of success/failure, it will be counted in the table as "Ablation", but the data are clearly "incomplete/inconsistent".*
- *If in a record, 3.19 (Ablation performed) = "0. No", and there is no indication of ablation energy source or success, yet a target (3.12) is given, this will be counted in the table as "No Ablation", but "Data complete/consistent" on the basis that 3.12 was simply the intended target.*

1.3 Data completeness

The tables in this section show the percentages of records that are non-blank for a number of important fields. Please note that the red/amber/green boundaries defined below do not indicate that achieving >95% in each field (green) is considered adequate. For obviously important fields such as GMC, NHS No, Ablation type (where ablation performed), centres should aim for 100% completeness and the boundaries in future years will become more stringent to reflect this.

A "non-blank" entry does not imply that data are valid, let alone correct. For example, a GMC number that is not 7 digits will count in this analysis, but is not valid (and of course an incorrect 7-digit GMC number may have been entered). For this reason, the activity data for a centre or operator later in the report may be smaller than the expected figures in Tables 3-6 might suggest.

>=95%
90-95%
<90%

Table 3: Data completeness of demographics

	1.03 NHS	1.04 Surname	1.05 Forename	1.06 DOB	1.07 Sex	1.09 Pcode
Demographic details	99.8	100	100	100	100	99.7

Table 4: Data completeness of clinical information

	2.01 Underlying heart dis.	2.02 Prev surg or interventn	2.03 Structural congen HD	2.04 Documented prior AF	2.05 Other doc. arrhythmia	2.06 Indication for proced.	2.07 Previous ablation
Clinical Details	63.7	44.9	39.8	50.6	75	60.1	23.6

The most common reason for low scores in some fields is that they have been left blank. For patients with structurally normal hearts, field 2.01 ("Underlying heart disease") should be ("0. None"). Field 3.19 ("Ablation attempted?") should never be blank. Unfortunately, the current dataset does not have the option ("0. None") for fields 2.07 ("Previous ablation") and 4.04 ("Previous anti-arrhythmic drugs"), so a low score in these fields does not necessarily indicate poor data quality. As a result, these fields have not been colour-coded. This oversight has been amended in the latest dataset revision and we encourage centres to enter ("0. None") where appropriate.

Table 5: Completeness of procedural fields

	3.01 Procedure time	3.02 Procedure urgency	3.04 1st Op. GMC no.	3.10 Consultant GMC No.	3.12 Ablation procedure	3.13 Mapping techniques	3.16 Total fluoro time (min)
Procedure	0	99.3	100	100	99.1	98.4	71.4
	3.18 Procedure durat (min)	3.19 Ablation attempted?	3.21 Abl. energy source	3.23 Transseptal approach?	3.24 Epicardial approach?	3.26 Success?	3.28 Acute Complication
Procedure	78.8	98.8	84.5	96.2	63.3	96.2	100

3.12, 3.13, 3.21, 3.26 are only required if 3.19 = "1. Yes"

In field "3.01 Procedure date/time", date is a pre-requisite for a record to be saved, and is therefore 100% complete by definition. However, the time component is also necessary (and cannot be "00:00" or "00:01") in order to identify the rare instances of two procedures on the same day, and avoid one being deleted as a duplicate. Thus, Table 5. only reports the completeness of the time component of field "3.01 Procedure date/time".

Table 6: Data completeness of atrial fibrillation ablation details

	4.01 LA size/vol	4.03 Rhyt at start	4.04 Prev AADS
AF ablation details	21.6	75.5	7.3

AF ablation details is only applicable if field "3.12 ablation procedures" = 15 (AF ablation)

2 Centre Activity

The table shows the reported procedures for the centre, based solely on field 3.19 ("Ablation attempted?"- rather than the adjudicated column headings in Table 2) and 3.12 ("Ablation procedure"). Acute outcomes are based on field 3.26 ("Success?").

Table 7: Type of ablation by procedure outcome (n)

		Acute outcome				
	N	Success	Partial	Fail	Indeterminate	Blank
No ablation/unknown	27	-	-	-	-	-
Simple targets						
AVNA	< 11	7	0	0	0	< 3
AVNRT	< 50	44	3	0	0	< 3
AP	< 20	15	0	< 3	< 3	0
CTI	< 54	49	< 3	0	0	< 3
Total Simple Procedures	118	-	-	-	-	-
Simple Multi-Target	0	-	-	-	-	-
Complex Atrial						
AF total	< 345	305	5	< 3	16	16
Cryo balloon	24	-	-	-	-	-
EAT/IART only	< 47	39	< 3	< 3	3	0
Total Complex Atrial	388	-	-	-	-	-
Complex Ventricular						
PVC/VT focal only	35	23	12	0	0	0
VT scar etc.	< 18	13	0	< 3	< 3	< 3
Total Complex Ventricular	51	-	-	-	-	-
Total Complex Cases	431	-	-	-	-	-
Other/Blank	5	-	-	-	-	-
Ablation in CHD	< 3	-	-	-	-	-

In accordance with ONS guidance, exact data have been suppressed where case numbers are less than 3 and approximate values provided- if applicable- when suppressed values could be derived, to ensure anonymity of patient data.

Definitions:

- *No ablation/unknown A procedure is only counted as an ablation if field 3.19 = "1. Yes". Some procedures do not result in ablation because: it was not intended; no substrate or arrhythmia was found; because of a complication or risk thereof.*
- *Simple targets For combined procedures, each "target" is counted separately (e.g. CTI + AP will count once for each target). However, a procedure is counted as "simple" if there is one or more simple targets, but no complex targets). Thus, the combination AF + CTI will count towards the CTI count but not the simple procedure count. AVNA = AV node ablation, AVNRT = AV nodal re-entrant tachycardia (slow or fast pathway), AP = one or more accessory pathways and CTI = cavotricuspid isthmus ablation for typical or clockwise flutter.*
- *Complex Atrial "AF total" = left atrial ablation for AF, using any energy type. Cases with AF and additional targets (simple procedures and AT/IART) are included within "AF total". "Cryo balloon" is a subset of "AF total". "EAT/IART only" = atrial ectopics/ectopic atrial tachycardia/intraatrial re-entrant tachycardia (not typical flutter) without concomitant AF ablation.*
- *Complex Ventricular "PVC/VT focal only" = target includes PVCs and VT (outflow or other focal) but not VT-scar, fascicular, or bundle branch re-entry. "VT Scar etc" = target includes VT-scar, fascicular or bundle branch reentry.*
- *Ablation in CHD If field 2.03 indicates presence of complex structural congenital heart disease.*

3 Operator Activity

BHRS standards (2016) recommend that doctors out of training that undertake catheter ablation perform a minimum volume of 50 cases per year in total; if complex ablations are undertaken, a minimum volume of

25 complex cases is recommended and $\geqslant 50$ complex cases is desirable.

The table below shows annual activity (as either first/second scrubbed operator, or responsible consultant) for each doctor uniquely identified by GMC registration No. Note that this table include trainees, for whom the above minimum volumes do not apply. Note that name, specialty and training status are taken from the GMC List of Registered Medical Practitioners in August 2018, some time after the period covered by the report, so the status of some doctors may have changed.

Table 8: Number of ablation procedures undertaken by doctors

GMC No.	Name	No ablation	Simple	Complex	Primary Specialty
6028347	Chen, Zhong	3	14	72	Cardiology
6148801	Debney, Michael	< 3	10	40	Trainee
4736710	Haldar, Shouvik	5	22	49	Cardiology and General (internal) medicine
4017187	Hussain, Wajid	3	19	68	Cardiology
4552817	Jarman, Julian	< 3	6	39	Cardiology
4723710	Jones, David	5	31	122	Cardiology
6070308	Mantziari, Aglaia-Angeliki	< 3	7	25	Cardiology
4049087	Norman, Mark	< 3	< 3	40	Cardiology
6029007	Opel, Aaisha	0	8	23	Cardiology
6057096	Panikker, Sandeep	0	0	< 3	Cardiology
4542133	Salukhe, Tushar	0	3	23	Cardiology
6076616	Shabeeh, Husain	0	6	14	Cardiology
6129361	Sohaib, Syed	< 3	6	35	Cardiology
6030099	Viswanathan, Karthik	< 3	16	7	Cardiology
4005793	Wong, Tom	< 3	< 3	26	Cardiology and General (internal) medicine

Exact data have been suppressed where case numbers are less than 3, to ensure anonymity of patient data.

In this year's and future reports, doctors will be solely identified by the stated seven-digit GMC number, and the name will be identified from the GMC register. This is because of the common finding of multiple submitted spellings of names. For records in which the GMC number is absent or invalid, the operator will not be identified. A procedure is ascribed to a doctor if his/her GMC number appears as first or second (scrubbed) operator, or as responsible consultant (fields 3.04, 3.07 or 3.10). It follows that each procedure may count toward the activity of up to three doctors, but if GMC numbers are missing, it may not be counted at all.

4 Centre compliance with national guidance

Centres' reported activity is evaluated against contemporary national guidance for simple and complex ablations. BHRS standards (2016) recommend that centres performing catheter ablation undertake a minimum volume of 100 cases/year, and that those undertaking AF ablation undertake a minimum volume of 50 such cases/year. In the table below, amber indicates a number 10% below or above the recommended minima.

Table 9: Total number of ablation procedures

	Procedures
Total ablation procedures	549
AF ablation procedures	343

Exact data have been suppressed where case numbers are less than 3, to ensure anonymity of patient data.

5 Reintervention

As an index of effectiveness, we are reporting all-cause reintervention within 1 year (2 years) of an ablation procedure. The definitions of "reintervention" are detailed below the table. Every ablation has been tracked for up to 1 year (2 years) to see whether it is followed by a re-ablation at any centre (where the reintervention was at a different centre, it has been assigned to the centre performing the index procedure). The table estimates the proportion of patients with one or more re-ablations.

In this analysis, patients have been tracked by both NHS No. and Hospital/Hospital No. However, because under-reporting of NHS No. may lead to reinterventions being under-identified, the national report will only include centres with $\geqslant 90\%$ completeness of NHS No. in both of the two years (3 years) used for analysis; the data deficiency will be highlighted for other centres.

Table 10: Re-interventions within 1 year

	No. of ablations in 2016/17*	Reinterventions within 1 year†
Simple ablations	163	< 3 ($< 3\%$)
Complex atrial ablations	422	56 (13.27%)
Complex ventricular ablations	21	< 3 ($< 12\%$)

Exact data have been suppressed where case numbers are less than 3 and approximate values provided- if applicable- when suppressed values could be derived, to ensure anonymity of patient data.

* All ablations performed between 1/4/16 and 31/3/17 are included as index cases (whether or not they were the patient's first ablation)

† Of these, the number of patients with 1+ reinterventions within 1-365 days.

Of the ablations performed in 2016-17, 0 patient(s) with simple ablation, 1 patient(s) with complex atrial ablation and 1 patient(s) with complex ventricular ablation had a reintervention within one year in a different hospital.

Table 11: Re-interventions within 2 years

	No. of ablations in 2015/16*	Reinterventions within 2 years†
Simple ablations	168	0 (0%)
Complex atrial ablations	327	69 (21.1%)
Complex ventricular ablations	35	6 (17.14%)

Exact data have been suppressed where case numbers are less than 3 and approximate values provided- if applicable- when suppressed values could be derived, to ensure anonymity of patient data.

* All ablations performed between 1/4/15 and 31/3/17 are included as index cases (whether or not they were the patient's first ablation)

† Of these, the number of patients with 1+ reinterventions within 1-730 days.

Of the ablations performed in 2015-16, 0 patient(s) with simple ablation, 6 patient(s) with complex atrial ablation and 3 patient(s) with complex ventricular ablation had a reintervention within two years in a different hospital.

Notes & definitions:

- *For simple ablations, a further procedure with the same target (e.g. CTI followed by CTI, or any AP followed by any AP) is considered a reintervention, but a further procedure with a different target (e.g. CTI followed by AP) is not. The "simple targets" count in the reintervention tables refer to procedures that included any simple target – including those combined with complex targets (which count as complex procedures elsewhere in this report). Thus the number of simple targets in these tables may exceed the number of simple ablation procedures elsewhere.*
- *For complex atrial ablations, any further complex atrial procedure (e.g AF followed by AF or AF followed by IART) is considered a reintervention. However, AF followed by CTI ablation or vice-versa is not.*
- *For complex ventricular ablations, any further complex ventricular procedure is considered a reintervention.*
- *A second (or third) ablation performed in the index year (for the 2017-18 report, the index year is 2016-17 for 1-year reintervention and 2015-16 for 2-year reintervention) will still count as an index case, and has been tracked for a further 365 or 730 days. Thus, for example, a patient undergoing two complex atrial ablations and three complex ventricular ablations within the follow-up period will count once as having complex atrial reintervention and once as having complex ventricular reintervention. Essentially, in each category the number of patients with re-intervention and NOT the number of reintervention procedures is counted.*
- *No attempt has been made to identify whether each index procedure was a "first ablation" as this is likely to be unreliable. In future we hope to address this and identify true first-time procedures.*