NHI Validation Routine

The National Health Index (NHI) number is used by many national and local systems to provide a safe and secure reference key for patient data. Because of its importance, the NHI number has a built-in validation routine that has been designed to allow systems to minimise typographical errors as NHI numbers are keyed in. In July 2020 a new NHI format was introduced. New format NHIs will not be issued to patients before 2023 to give providers time to change their systems to accept the new format.

NHI number structure

The NHI number is a unique 7-character identifier. It may have one of 2 formats

> 3 alphabetical characters followed by 4 numeric characters, the last character is a check digit
>
> **OR**
>
> 3 alphabetical characters followed by 2 numeric characters and lastly 2 alphabetical characters, the last character is an alphabetic check digit.

Format 1	**AAANNNC**
Where:	A is an alphabet character, but not ‘I’ or ‘O’
	N is a number
	C is a number, which is also the check digit

Format 2	**AAANNAC**
Where:	A is an alphabet character, but not ‘I’ or ‘O’
	N is a number
	C is an alphabet character, which is also the check digit

Alphabet Conversion Table For Check Digit Calculation

Each alphabet character is assigned a number based on the following table:

A	1		J	9		S	17
B	2		K	10		T	18
C	3		L	11		U	19
D	4		M	12		V	20
E	5		N	13		W	21
F	6		P	14		X	22
G	7		Q	15		Y	23
H	8		R	16		Z	24

Validation Steps

Step	Description	Example: ZZZ0016	Example: ZZZ0024	Example: ZZZ0044	Example: ZZZ00AX
1	Position 1,2 and 3 must be within the Alphabet Conversion Table (see above), that is, they are not 'I' or 'O'.	ZZZ	ZZZ	ZZZ	ZZZ
2	Position 4 and 5 must be numeric	00	00	00	00
3	Position 6 and 7 are either both numeric or both alphabetic	16	24	44	AX
4	Assign first letter its corresponding value from the Alphabet Conversion Table and multiply value by 7.	24*7=168	24*7=168	24*7=168	24*7=168
5	Assign second letter its corresponding value from the Alphabet Conversion Table and multiply value by 6.	24*6=144	24*6=144	24*6=144	24*6=144
6	Assign third letter its corresponding value from the Alphabet Conversion Table and multiply value by 5.	24*5=120	24*5=120	24*5=120	24*5=120
7	Multiply first number by 4	0*4=0	0*4=0	0*4=0	0*4=0
8	Multiply second number by 3.	0*3=0	0*3=0	0*3=0	0*3=0
9	Multiply third number by 2	1*2=2	2*2=4	4*2=8	
	If the position 6 is an alpha character assign its corresponding value from the Alphabet Conversion Table and multiply value by 2.				A=1 1*2=2
10	Total the results of steps 4 to 9.	168+144+120 +0+0+2 = 434	168+144+120 +0+0+4 = 436	168+144+120 +0+0+8 = 440	168+144+120 +0+0+2= 434
11	Apply modulus 11 to create a checksum. NB: Excel has a modulus function MOD (n,d) where n is the number to be converted (eg, the sum calculated in step 9), and d equals the	434/11 = 39 r 5 (5 is the checksum)	436/11 = 39 r 7 (7 is the checksum)	440/11 = 40 r 0 (0 is the checksum)	

	modulus (in the case of the NHI this is 11).				
	Divide by 24 and get the remainder (in Java/C#/javascript/etc , this is the (mod) % operator)				434/24 = 18 r 2 (2 is the checksum)
12	If checksum is '0' then the NHI number is incorrect.	Continue to step 13	Continue to step 13	NHI number wrong. Continue to step 16.	Continue to step 13
13	Subtract checksum from 11 to create check digit.	11-5 = 6	11-7 = 4		
	Subtract checksum from 24 and use the conversion table to create alpha check digit.				24-2 = 22 22 = X
14	If the check digit equals '10', convert to '0'.	Continue to step 15	Continue to step 15		
15	Fourth number or last character must equal the check digit.	6 = 6	4 = 4		X = X
16	NHI number passes the NHI validation routine.	Yes	Yes	No (Note: no digit can be added to the end of ZZZ004 to create a valid NHI number).	Yes

This validation routine allows confirmation that an NHI number is in the correct format and that it is a valid NHI number. Its main purpose is to identify mistyped NHI numbers.

The validation routine does not confirm that a health and disability support services has assigned the NHI number to a correct individual. Nor does it mean the NHI number has been registered on the NHI.