Assessing the uptake of Intermittent Pneumatic Compression (IPC) in acute stroke following the publication of the CLOTS3 trial

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BACKGROUND

The CLOTS3 trial established that IPC reduces the risk of deep vein thrombosis (DVT) in immobile patients with acute stroke. In August 2013 NHS England and NHS Improving Quality (NHS IQ) put forward a bid to supply approximately six months' worth of IPC sleeves to all stroke units in an effort to realise the benefits in every day practice. We describe the uptake of IPC application in acute hospitals in England, Wales, and Northern Ireland over time, and investigate the characteristics of patients treated with IPC.

METHOD

Data were extracted from the Sentinel Stroke National Audit Programme (SSNAP), the national register of stroke care. Data collection on IPC usage has been reported quarterly from 1 April 2014. We analysed the percentage of hospitals applying IPC to their patients, and the characteristics of patients (N=7480) either receiving or not receiving IPC in hospitals treating at least 40% of their patients with IPC.

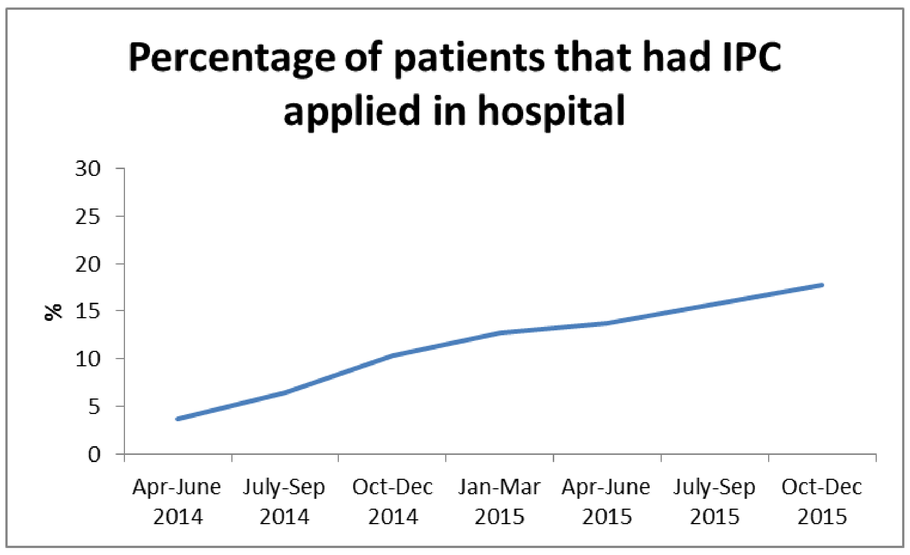

Figure 1. National uptake in Intermittent Pneumatic Compression stocking use

N=7480	IPC not applied (N=3753)	IPC applied (N=3727)
Gender, female	48.6%	52.3%
Age, median (IQR)	76 (66-84)	80 (70-86)
Congestive heart failure	6.2%	6.4%
Hypertension	54.3%	56.8%
Atrial Fibrillation	21.4%	22.8%
Diabetes	19.7%	19.5%
Prior stroke/TIA	26.3%	26.7%
Prior Rankin:		
0	58.8%	49.1%
1	15.1%	16.1%
2	10.0%	11.7%
3	9.5%	14.6%
4	5.1%	6.9%
5	1.6%	1.7%

Table 1. Baseline patient characteristics of patients in hospitals treating at least 40% of patients with IPC

RESULTS

IPC use has increased over time; from 3.7% (563) in April-June 2014, to 13.7% (2710) a year later, and is currently at 17.7% (3611) nationally (October-December 2015), see Figure 1. The percentage of hospitals applying IPC to any of their patients has increased from 26% in April-June 2014 to 76% in Oct-Dec 2015, see Figure 2. The geographical spread of IPC use is shown in Figure 3.

There is wide variation between hospitals; from 0% to 64% of patients with IPC applied. 36/149 (24%) hospitals did not use IPC. IPC is applied for a median of 7 days.

In hospitals treating at least 40% of their patients with IPC, IPC patients had suffered more severe strokes (median NIHSS 7 vs 3, p<0.001) and were older (median 80 vs 76 years, p<0.001). Other patient characteristics are given in Tables 1 and 2.

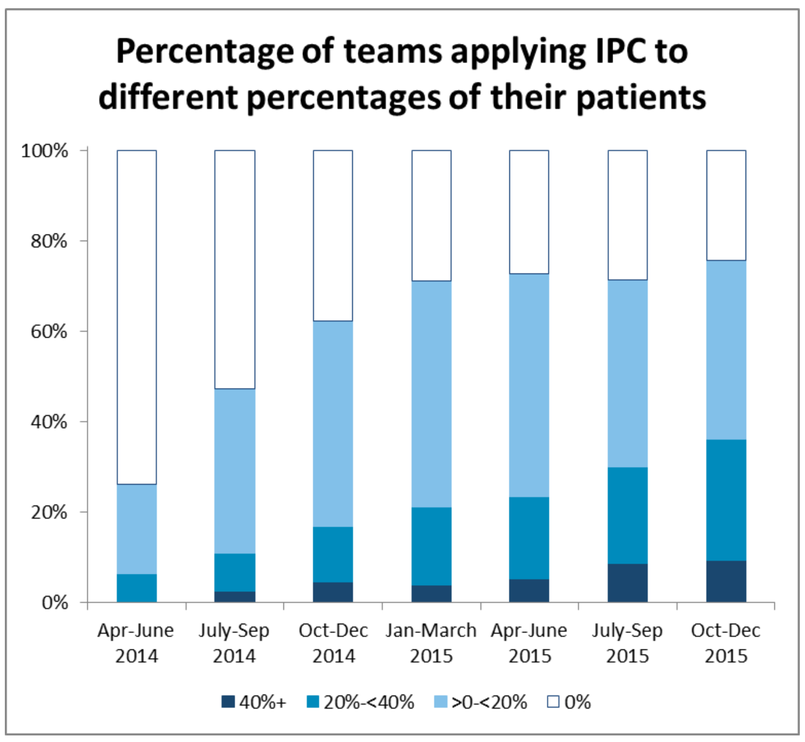

Figure 2. Changes in the percentage of hospitals applying IPC to their patients

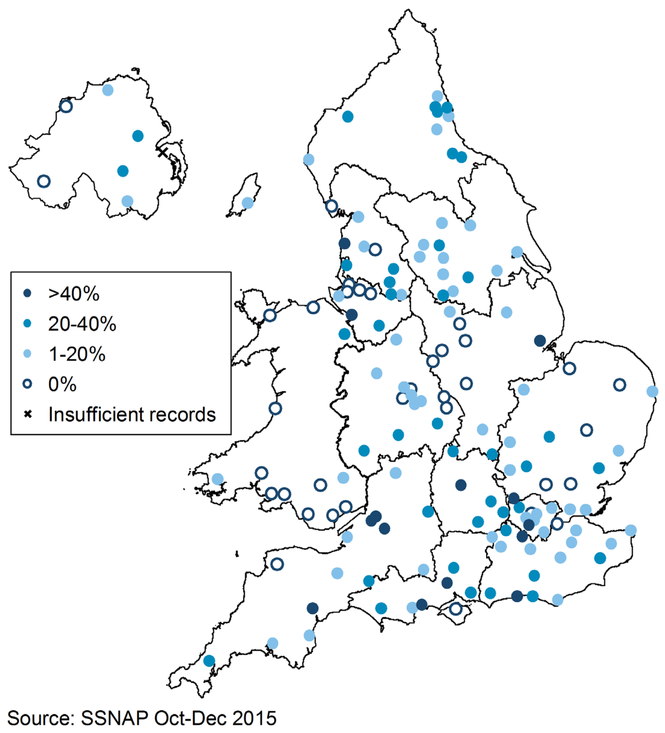

Figure 3. Geographical variation in the percentage of patients in hospital applied IPC

N=7480	IPC not applied (N=3753)	IPC applied (N=3727)
Stroke type		
Infarction	86.0%	85.6%
Haemorrhage	13.3%	14.1%
Unknown	0.7%	0.2%
Level of consciousness on arrival		
0	84.2%	77.6%
1	7.9%	15.0%
2	3.4%	5.0%
3	4.5%	2.4%
Stroke severity (NIHSS if fully completed)	N=3296 (87.8%)	N=3291 (88.3%)
0	9.2%	4.3%
1-4	50.7%	29.7%
5-15	27.5%	42.2%
16-20	5.2%	12.4%
21-42	7.4%	11.5%
Palliative care within 72h	8.3%	3.9%

Table 2. Patient characteristics of patients in hospital treating at least 40% of patients with IPC

CONCLUSION

Despite the evidence base for IPC as an **effective method** of reducing DVT risk and possibly improving survival after stroke, uptake remains **far lower than expected** from primary research. This should be a **priority area** for quality improvement in stroke care.