

Transforming Data into Actionable Intelligence: Health and Social Care



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NHS National Services Scotland



- NHS National Services Scotland delivers services critical to frontline patient care and in support of the efficient and effective operation of NHS Scotland (www.nhsnss.org)
- Our services:
 - Blood, Tissues & Cells (Scottish National Blood Transfusion Service)
 - Information Technology
 - Central Legal Office
 - Practitioner & Counter Fraud Services
 - Procurement, Commissioning & Facilities
 - Public Health and Intelligence (PHI) = ISD + HPS

ISD provides a range of information, statistical services and advice that support the NHS, its partners and wider public sector HPS provides services and information on infections, immunisations, blood borne viruses, travel health, & public health



The data landscape



Every week in Scotland data are collected on around:

1,000 Births

15,000 Out of Hours attendances

20,000 Screened for cancer

30,000 Hospital discharges

30,000 A&E attendances

40,000 NHS eye exams & tests

90,000 NHS dental treatments

200,000 Outpatient clinic attendances

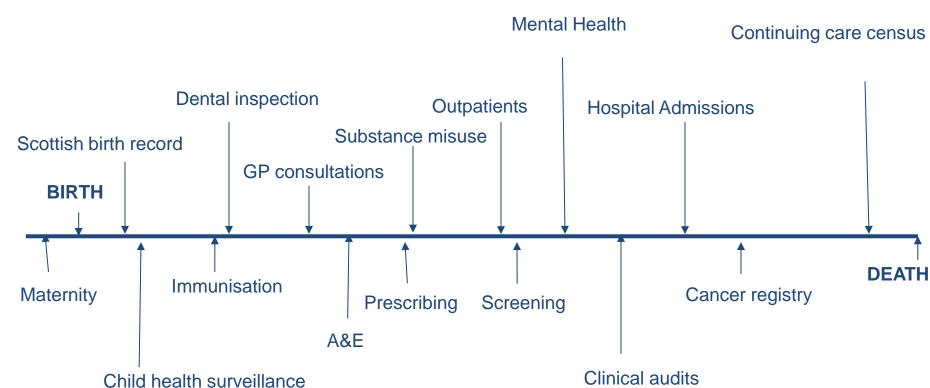
500,000 GP practice consultations

2,000,000 Drugs dispensed



Data from cradle to grave





Most of our data sets offer 100% coverage



ISD – working with stakeholders



- Traditionally, mainly central government, health (NHS management), publications
- Public accountability Parliamentary Questions, FOIs, regulatory bodies
- Gradual expansion to other stakeholders, accelerated in recent years

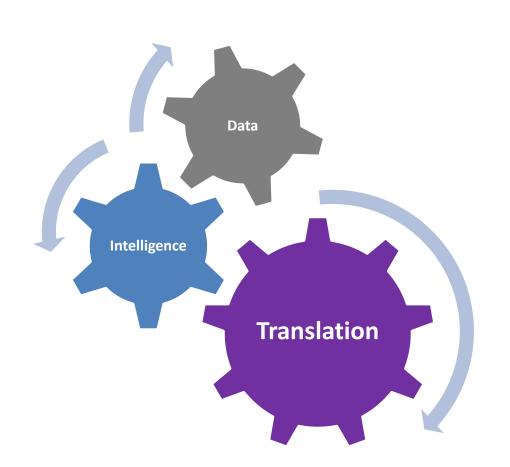
Some examples:

- Wider 'health'- clinicians/practitioners, other national/local health orgs
- social care
- Wider public (and other) bodies Local Authorities, Community Planning Partnerships, Third Sector
- Research eDRIS/Farr





Creating greater value for customers



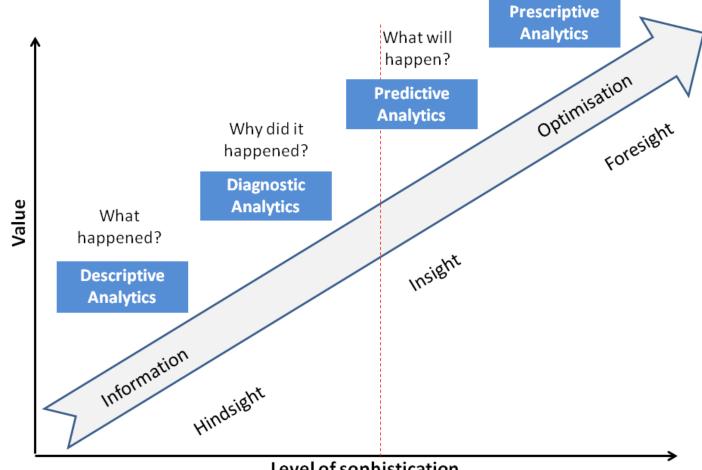
Our direction of travel





Analytic capabilities

What's the best outcome and how can we make it happen?



Level of sophistication





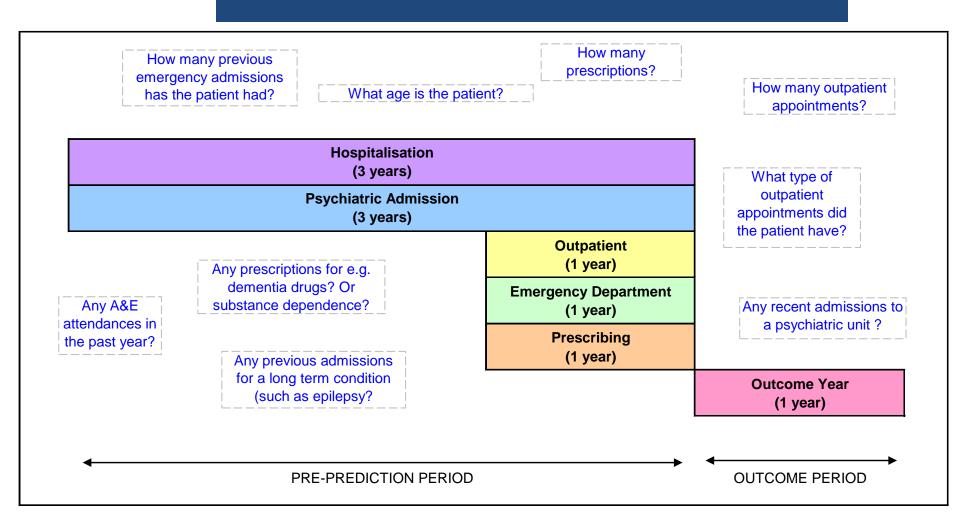
Data Product – risk prediction tool (SPARRA)

- SPARRA Scottish Patients at Risk of Readmission & Admission quantifies risk in coming year.
- SPARRA scores (%) calculated monthly for approx 4.2 million patients (80% of population)
- Maximise value of anticipatory care by targeting patients most likely to benefit from interventions (medium-high risk)
- First, stratify the population; SPARRA stratifies on basis of risk of hospital admission
- SPARRA helps identify patients who may benefit from preventative approach & to ensure that patients are known to the relevant services





Re-admission risk factors and data sets







How SPARRA works

$$\ln\left(\frac{\hat{p}}{(1-\hat{p})}\right) = b_0 + b_1 X_1 + b_2 X_2 + ... + b_p X_p$$

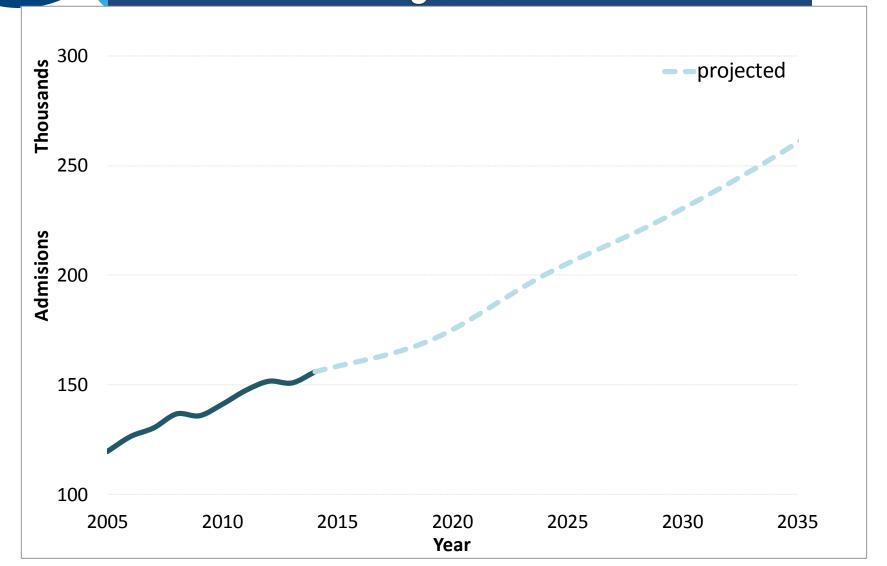
$$\text{SPARRA Score} \qquad \text{Age Group} \qquad \text{Gender} \qquad \text{Whatever}$$

•Logistic Regression is used to find straight lines of best fit through all of the variables to produces "coefficients". • An individual's value for each variable used in the SPARRA model is multiplied by the coefficients and the sum of all these are converted (using something called the logit link...hence logistic regression) to get a value between 0-1.





Emergency hospital admissions rate for patients aged 75+







LIST - Local Intelligence Support Team

Supporting Health and Social Integration Across Scotland

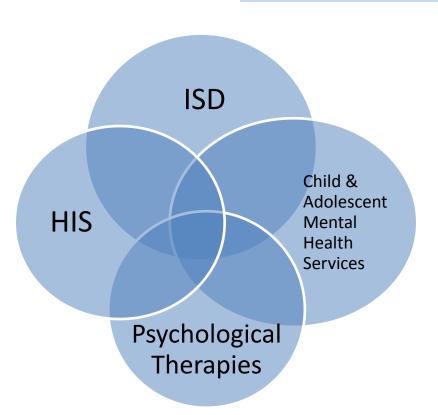
https://youtu.be/YIVxjAm7vi0







MHAIST – mental health access



1 x analyst supporting Distress Brief Intervention pilot work till 2020 based in Lanarkshire.

MHAIST team comprises:

İSD

- Local based analysts x 10
- Central analysts x 4
- Data management x2
- Clinical lead x1

HI_{\$}

- Clinical leads x2
- Improvement advisors x2
- •Programme support staff x2





'Discovery' – tool / service

Comparative information to help review, monitor and plan services and support quality improvement.



Provides NHS managers and clinicians with comparative and benchmarking information to help service planning and delivery.



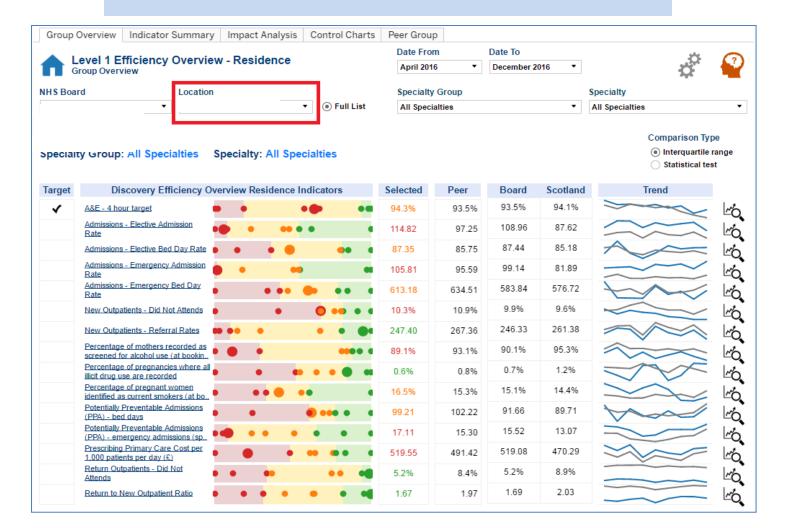
Information at NHS Board, hospital & specialty.
Drill down, incl. to individual level (approved access)
Scottish and English health benchmarking data.

▲ Level 1 Efficiency Overview - Treatment					Date From April 2014 •		Date To Mech 2015 +			0 6
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Target	NSS 0	Seconery Demonstra	tor Indicator		90.5%	915%	\$3.5%	935%	() States	icaltee





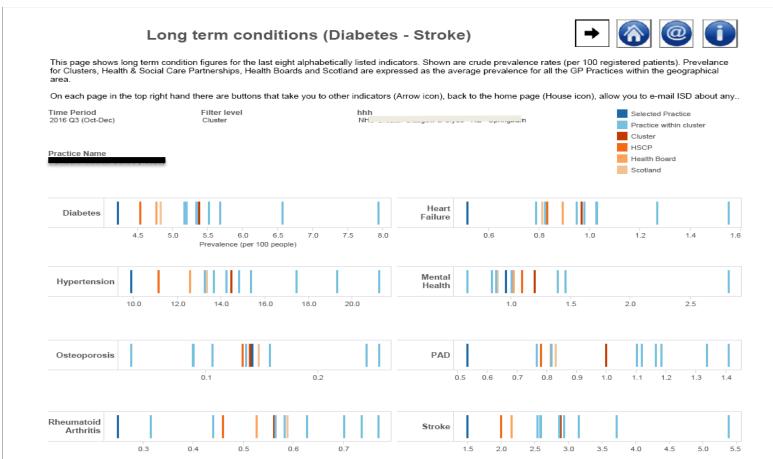
'Discovery' – tool / service















LIST

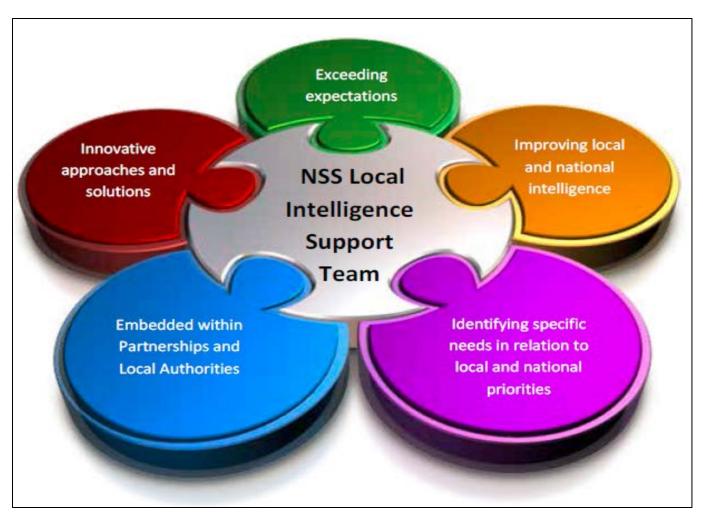
some words from our staff

https://youtu.be/3fmpEQUATyQ











Transforming Data into Actionable Intelligence: Health and Social Care



INTERMISSION

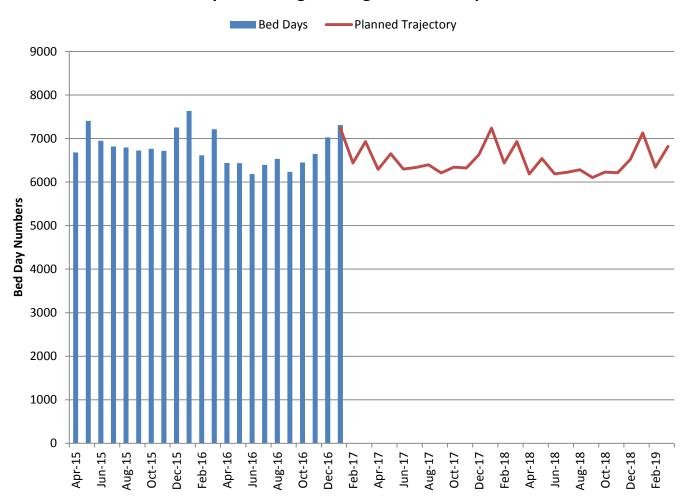




Number of Monthly Emergency Bed Days in Acute Specialties for People of All Ages Living in Partnership X

example:

helping
Integration
Authorities
estimate
future needs



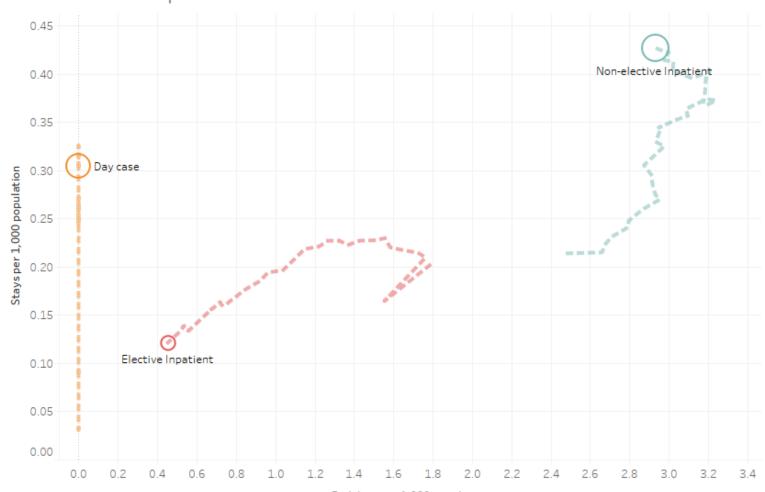




Scottish Acute Hospital Admissions: 1981-2016

example:

exploratory
Tableau /
motion chart







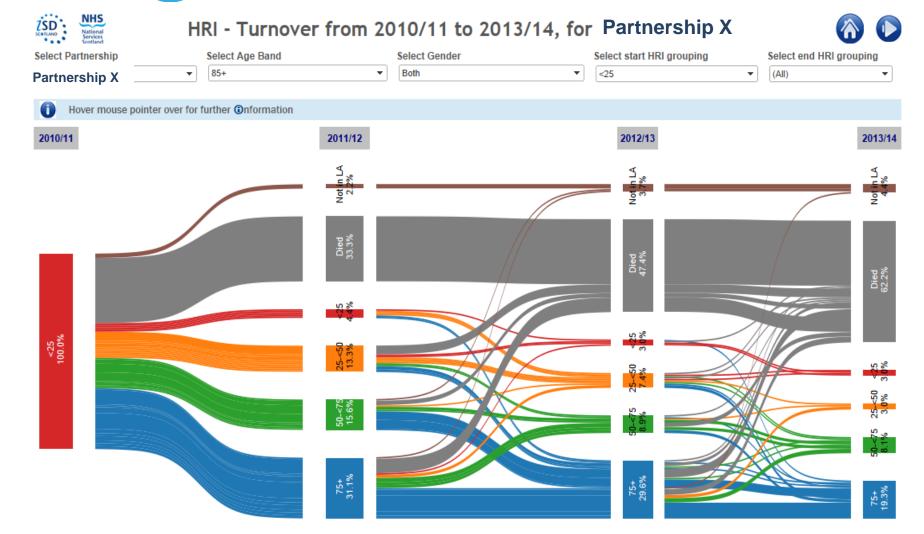
LIST

'Our Stories' - Releasing Time To Care

https://youtu.be/u_yOnj8ZQJQ





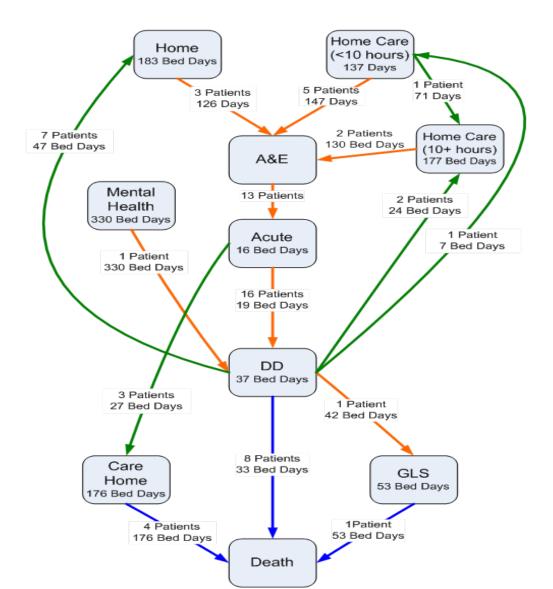






Example:

exploratory health & social care 'pathways' analysis







NSS Local Intelligence Support Team













PROJECT PATHWAY

LIST met with the organisations to review and assess the data they held

2. ISD check quality of demographic data and permissions Collection of demographic data from third sector

4. Work stalled: mental health is a 'sensitive area' so permission tricky. Also capacity limited

Linkage of the third sector data to statutory data using the derived CHI

Analysis and

outputs

7. ESS facilitate

meeting of third

and public agencies

at locality level to

share and discuss

pathways

1. Source third sector data to use

PKAVS Identified third sector organisations to participate in the Pilot study 3. ISD to set permissions from H&SCP to access public data

Ensure appropriate governance in place to share and use data for linkage CHI (Community Health Index) seeding of these data

5. To see if can work through social care system 'SWIFT'. ISD continue to help projects with data clean up and permissions

ISD – Information Services (NHS) ESS – Evaluation Services Scotland





LIST – 'Our Stories' – Accident & Emergency

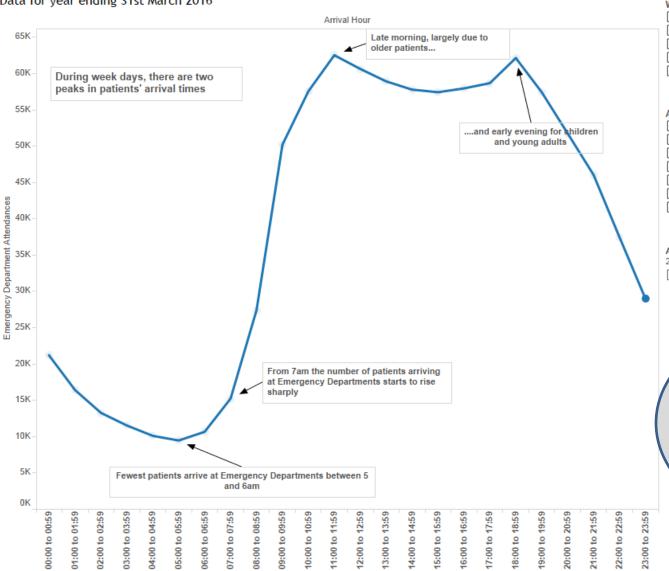
https://youtu.be/DBYIJkBqGxg





Understanding Emergency Care in NHSScotland When do patients attend Emergency Departments?

Data for year ending 31st March 2016



Select weekday or week...

- Weekday
- Weekend

Weekday

- ✓ Monday
- ✓ Tuesday
- ✓ Wednesday
- ✓ Thursday
 ✓ Friday

Age Band

- ✓ Null
- **2** 0-4
- **✓** 5-16
- ✓ 17-25
- 26-45√ 46-64
- ✓ 65+

Arrival Hour 23:00 to 23:59

Show history

Day & time of arrival at emergency departments for capacity and resilience planning





LIST

Some words from our local partners

-https://youtu.be/M5zj644Kvfw



Open Data - #1

EXPLORE *

TOOLS +

SEARCH -

HELP



STATISTICS.GOV.SCOT

ACCESS TO SCOTLAND'S OFFICIAL STATISTICS



NHS Information Services Division

Data

API

DATASETS

Age of First Time Mothers

Alcohol Related Hospital Discharge

Ante-Natal Smoking

Breastfeeding

Cancer Registrations (1997 to 2009)

Cancer Registrations - Annual Data

Child Dental Health

Delayed Discharges

Drug Related Hospital Discharge

DTP/Pol/Hib Immunisation

Emergency Repeat Admissions

End of Life Care

Open data on the public sector official statistics platform www.statistics.gov.scot



Open Data - #2



ISD Scotland better information, better decisions, better health

Access Keys

Skip Navigation



Open Data

Prescribing and Medicines



You are: Home Topics Prese	Google	Custom Search	Search X	C.		
Topics	Publications	Products & Services	A-Z Index	my/SD		

Prescribing Data Extract File - Publication Date 11 April 2017

The data extract is presented as downloadable text (.csv) file. Each monthly dataset is large, over 1 million rows. It contains details of items dispensed in the community at prescribing location code level for General Practice data and aggregated by NHS Board for other prescriber location types. Items are described at British National Formulary (BNF) item description level.

Revisions made to Open Data files (14/06/2016)

Three revisions were made to the open data files on 14th June 2016. These revisions were applied to all of the open data files published on the ISD website from October 2015 data onwards.

- Items with no BNF item code attributed have been added to the dataset. For a sample month this equated to 0.4% of all items. These items are displayed in the data file as having a blank BNF item code.
- Health board codes have been updated from 2006 Health Board codes to 2014 Health Board codes.
- . A quantity measure has been added to the dataset in order to reflect customer demand. There are inconsistencies with this many than the contract of the cont please see our Frequently Asked Questions. It has been assessed that the effect of inconsistencies is likely to be small and

Warning: These files are very large and may take a considerable time to download.

- 201701 Prescribing Data [86.3mb]
- 201612 Prescribing Data [88.6mb] 204644 December Detail No. 2011



Prescribing open data on the ISD website

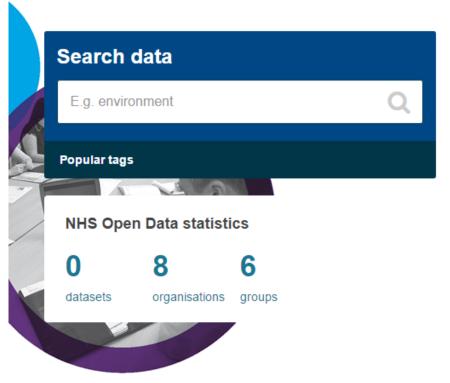
http://www.isdscotland.org/ Health-Topics/Prescribingand-Medicines/



Open Data - #3



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Datasets	Organisations	Groups	About	Search	Q		NHS National Services Scotland		HS tional vices	
									Sco	tland



The amount of data that the public sector holds is continually growing. The data held will allow the delivery of personalised services (e.g. health and social care) to non-personal information (e.g. environmental data). This data has value for the organisation collecting and holding it but there is potential to add value by making appropriate data available to others to reuse. We call this making data "open".





Blood, tissues and cells

NSS supplies blood, tissues and cells to ...





Solutions for Scotland



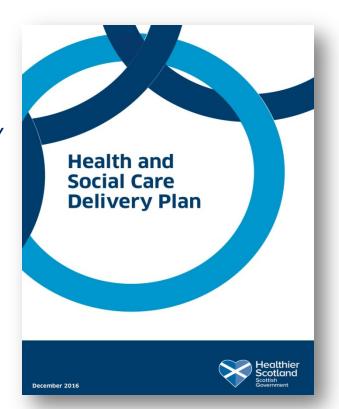
Four major programmes:

Health and Social Care integration

"Optimising and joining up balanced health and care services, whether provided by NHS Scotland, local government or the third and independent sectors"

The National Clinical Strategy

"Strengthen primary and community care, improve secondary and acute care focus on realistic medicine"



Public Health Improvement

"Create a clear set of national public health priorities for Scotland as a whole and streamline the current public health landscape"

NHS Board Review

"Review the functions of existing national NHS Boards to explore the scope for more effective and consistent delivery of national services and the support provided to local health and social care systems for service delivery at regional level"







Questions



Better data. Better lives.

http://www.isdscotland.org/About-ISD/Contacts/