Impact Analysis of Digital Initiatives on local Health Economies

Dr Harald Braun
Our Expertise

i5 Health develops healthcare algorithms based on international standards to support health economies. Algorithms are developed with a strong evidence base ... and access to patient level Big Data.

To facilitate true Population Health Management with real patients.
i5 Health supports the entire NHS Commissioning Cycle with actionable analytics

- Commissioning Opportunity Toolset (COP)
  - Identify service gaps
  - Facilitate prioritisation
  - Cost, supply and demand modelling
  - Business case / case for change
  - Implementation support

- Diagnosis Stratification (DST)
  - Case finding
  - Pro-active care
  - Identification of patients at risk
  - Supports targeted screening
  - Optimises use of resources
Benefits of Actionable Analytics

- Quantify the clinical needs of the local population through evidence based PHM
- Apply learnings from digital interventions from around England - locally
- Can be part of a common framework to inform commissioners
- Supports options appraisal on economically evaluated interventions
- Supports local planning and implementation with demand requirements
- Mapping of digital interventions to existing London, STP and CCG plans
Methodology

1. **Identify Best Practice**
2. **Identify Patient Groups**
3. **Address Care Gaps**
4. **Refer Patients**
5. **Measure Outcomes**

The cycle continues with these steps, ensuring a continuous improvement process in health services.
Identification of interventions that support patient groups in the most appropriate setting within the local health economy

Objective: Match Patients to Interventions

By matching patients to interventions, evaluate effects, identify gaps, model scenarios, facilitate referrals and monitor outcomes
Identify Best Practice

Identify interventions that are successful elsewhere in the NHS
Identify Patient Groups

Identify patients cohorts that best match an intervention based on their clinical profile
Address Care Gaps

Perform service gap analysis and inform strategic direction for short and long term
Referring patients to most appropriate service is facilitated if referral guidelines and Directory of Services (DoS) are well defined.
Monitoring of Interventions to ensure patients have access and receive treatment at the planned cost

Service Monitoring

Impact Evaluation

Readmissions

i5 Commissioning Suite – Invoice Validation

**Challenge**
- £60 BN of invoices – Erroridden
- Misallocations
- Conflict
- Misleading Planning
- Waste of Resources

**i5 Invoice Validation Module**
Real-time identification of errors:
# Impact Evaluation Scope

## Self Care
- Arts on Prescription
- Asthma Service for young people
- Books on Prescription
- Chest Pain Home Care
- Deafblindness
- Dementia Cafe/ Food Clubs
- Ecotherapy for Substance Abuse patients
- Education on Prescription
- Enhanced Home based palliative care
- Exercise on Prescription
- Falls Prevention
- Green Gym
- Information, Advice and Guidance (IAG)
- Living with Diabetes
- Mobility
- My Self Care Plan
- New Beginnings Course
- Overweight and Obesity Management
- Patients with acute exacerbations COPD
- Primary support group problems
- Redesign eating disorder service
- Self Management for Chronic conditions
- Smoking cessation interventions
- Social isolation
- Time Banks
- Volunteer Anorexia & Bulimia Care
- Volunteer befriending service

## Secondary Care
- CIED surveillance of electrocardiogram
- Diabetes inpatient care
- Procedures of limited clinical value
- Virtual Wards
- Discharge to Assess
- Intermediate Care Team
- Avoidable Admissions
- GP at the front door of A&E
- Hear and Treat by Ambulance Team
- Kids acute community response team
- Minor Injury Unit
- Nightsitters at A&E
- Prompt initial senior clinical assessment
- Rapid access Neurology Clinic
- Roving GP to Ambulance
- See and Treat by Ambulance Team

## Community
- Care of the Elderly
- Outreach fracture service
- Teams for management of COPD
- Learning Disability Team
- Palliative Cancer care services
- Urology service
- Home administration of IV diuretics
- Home Based Hospitalisation
- Intermediate Care
- Patients with respiratory disease
- Management of patients with stroke
- Musculoskeletal Disease Pathway
- Orthopaedic enhanced recovery programme
- Stratified cancer pathways

## Primary Care
- ACS Conditions
- Atrial fibrillation detection
- Cardio vascular strategy
- Frequent Flyers
- GP Extended Hours
- Home administration Heart Failure
- Home based care of Frail Patients
- Consultation closure in 111 calls
- NMP Nurses in Out-of-Hour practices
- Reducing risks in Diabetes patients
- Respiratory Group including Sleep Apnoea

## Digital Health
- A&E Attendance Reduction AI
- Access to EPR during 111 Calls
- Arts on Prescription
- Asthma Aid Sensor
- Duplicate Pathology and Radiology Tests
- Avoiding Re-Entry of Care Plans
- Babylon Health
- Calls due to Missing Discharge Letters
- Calls due to Missing or Illegible Test Results
- Calls due to Patient Enquiries to Trust
- CDSS for Case Finding
- CDSS for Cognitive Peer-Review
- CDSS for Photographic Image Analyses
- Diabetes – Self Management and Self Coaching
- Digital Task and Handover System
- Digitally shared Care Plans at Care Homes
- Digitally shared Care Plans for LTCs
- Digitally shared CMC Care Plans
- Discharge to assess LOS Reduction
- DNA reduction in Primary Care
- DNA reduction in Secondary Care
- Electronic referral to pharmacy ePrescribing
- Exercise on Prescription
- Self-Management of Chronic Conditions
- GP support from Secondary Care
- Guided Rehabilitation
- Image Based Triage for Dermatology
- Mobile enabled community nursing
- Mood Monitoring
- Heart Failure Monitoring in Primary Care
- Heart Failure Monitoring in Secondary Care
- OP Post-operative check-up (e-PAQ)
- OP Pre-operative screening (e-PAQ)
- Pathology Improvement Programme
- Records Retrieval due to change of Address
- Transfers between hospitals
- Transfers initiated by patient choice
- Postage Savings (eRS)
- Postage Savings e-RS and email
- Primary Care Online Triage system
- Reduction in paper handling
- Referral Support Service
- Communication of test results
- Virtual OP clinic
- Remote monitoring of Drug dosage
- Self-care and care planning in care homes
- Time Savings in A&E due to EPR Access

## Outpatients
- AEC-Conditions
- Nurse led clinics for CHD
- Nurse-led clinics for children with eczema and constipation
- NMP Podiatry Service
- NMP Physiotherapist services
- Nurse-led community ear irrigation service and audiology test
- Procedures suitable for Primary Care

## MH & SC
- Independent NMP in MH Setting
- Alcohol Care teams
- Mental Health Support unit at A&E
- A&E liaison psychiatry Model
- Provision of Service to reduce suicide
- Integrated health and social care teams
- Primary support group problems
- Intermediate Care

## Care Homes
- COPD Care support to Nursing Home
- COPD Case Management
- COPD exacerbation Integrated Care
- Dementia Care
- Geriatric input into nursing homes
- NMP Palliative Care at home
- Use of NMP in Care homes

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Population Health Analysis Tools

Interactive Dashboards
Analysis prepared for London’s 5 STPs, 32 CCGs and 1,400 practices
Helps practices identify populations to target

List of Opportunities
Enables STPs / CCGs to carry out predictive modelling in respect of local conditions, estimated costs of initiatives and the effect of multiple LTCs

Help and Support
A Frequently Ask Questions (FAQ) on the use of the tools is available here.

USER GUIDE

[Images of dashboards and tools]
Interactive Heat Maps - Online

London

South West London STP
Heat Maps for London

London Digital Opportunities

Filter Options
- Financial Year: 2016/17
- Location: Select All, Primary Care, Primary Care Admin, Secondary Care, Secondary Care Admin
- CCG: Select All, NHS BARKING AND DAGENHAM CCG, NHS BARNET CCG, NHS Haringey CCG, NHS Waltham Forest CCG

Opportunity by Initiative
- Financial Opportunity by Digital Initiative
- Opportunity by STP
- Opportunity by CCG

Financial Opportunity £718M

Opportunity by STP

Opportunity by CCG

Financial Opportunity by CCG for London Region

North Central London
- NHS BARNET CCG
- NHS CAMDEN CCG
- NHS ENFIELD CCG
- NHS HARINGEY CCG
- NHS SLEWTON CCG
- NHS BARKING AND DAGENTH CCG
- NHS CITY AND HACOEY CCG
- NHS MANSFIELD CCG
- NHS NEWHAM CCG
- NHS REDBRIDGE CCG
- NHS TOWER HAMLETS CCG
- NHS WALTHAM FOREST CCG

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<th>STP</th>
<th>CCG</th>
<th>GP Consultation</th>
<th>AE Attendance</th>
<th>OP Appointment</th>
<th>Bed Days</th>
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Heat Maps for STP

Filter Options

Financial Year
- 2016/17

Location
- Select All
- Primary Care
- Primary Care Admin
- Secondary Care
- Secondary Care Admin

CCG
- Select All
- NHS BARNET CCG
- NHS CAMDEN CCG
- NHS ENFIELD CCG
- NHS HARINGEY CCG

Financial Opportunity by Digital Initiative

Opportunity by Initiative

Financial Opportunity by CCG

Opportunity by CCG

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£117M Financial Opportunity

Financial Opportunity by CCG

Opportunity by CCG
List of Opportunities – PDF Report

London

Social Prescribing & Expert Patient Programme Modelling
London (All CCGs)

Report is based on HES 2013/14, 2014/15, 2015/16 and 2016/17 data

06 May 2017

North Central London STP

Social Prescribing & Expert Patient Programme Modelling
South West London SPG
(NHS Croydon, Kingston, Merton, Richmond, Sutton and Wandsworth CCGs)

Report is based on HES 2013/14, 2014/15, 2015/16 & 2016/17 data

06 May 2017
North Central London STP

Methodology

**COP Methodology**

COP is a methodology, based on secondary care data that matches successful interventions to patient groups using criteria specific to each intervention. This facilitates identification of care gaps in pathways or development of services and new models of care for the local health economy. The COP methodology supports healthcare organisations with reports that help deliver implementable schemes based on STP strategy and clinical needs of their populations. In particular, COP:

- Enables bottom-up, patient-level, processing that matches patients to initiatives
- Calculates how many patients can benefit from an initiative
- Aggregates the current acute cost for treatment of those patients
- Assesses number of patients sufficient for a new initiative within the CCG/STP footprint
- Estimates the return on investment for each initiative
- Provides links to reference material of suggested initiatives
- Facilitates creation of what-if scenarios for modelling purposes
- Informs planning, evaluation and implementation
- Provides strategic reporting and real time monitoring

In the context of STP, a principal advantage of the COP reports is the overview they give to enable the orchestration of more synchronised and complementary improvement plans that are currently a function of funding and other financial incentives tied to KPIs of individual CCGs. The COP reports can help identify the variations, contribute to a constructive dialogue and highlight the possibilities for cooperation within the STP footprint.

Patient Flows

**Overall Impact in London on Patient Flows**

The overall impact on patient flows by implementing Digital Healthcare has been graphically illustrated in the images below. It can be seen that up to 25% of patients can be subject to “Channel Shift” in primary care on aggregate - increasing capacity in the settings below.

**Digital Initiative**

- **Primary Care**
  - Increase in GP consultations in CCGs

**Summary**

- Digitalisation in primary care can help to reduce A&E waiting times.
- By developing new ways for patients to access services, such as GP consultations and A&E, the system can be improved.

**List of Initiatives**

1. **Primary Care**
   - **Strategic Plan**
     - Increase in GP consultations in CCGs

2. **Digitalisation**
   - **Objective**
     - Increase in GP consultations in CCGs

Diagrams and tables illustrate the impact on patient flows and the overall impact on the STP's finances.
Summary and Next Steps

The tools demonstrated can be used to:

- Quantify the non-clinical needs of the local population (economic evaluation)
- Apply learning from digital interventions locally
- Can be part of a common framework to inform commissioners
- Supports options appraisal on economically evaluated interventions
- Facilitates local planning and implementation by providing examples
- Mapping of digital interventions to existing London, STP and CCG plans

Next steps to be undertaken by the STP / CCG:

- Review of existing Digital interventions
- Referral process review and resources
- Capacity & Demand review and gap analysis
- Case for Change for existing services and processes
- Business Case and Benefits Realisation Plans
- Communication Plans to reach out to GPs and Patients
- Evaluation Plans of SP interventions
Thank You