## Context

**COPD identified as a focus area for ICHP**
- Significant cause of morbidity and mortality
- Evidence-base of best practice
- Potential to lower cost / improve patient access and outcomes

### Potential to build on work that has already been carried out in NW London
- Including the CLAHRC care bundle and other initiatives

### We have recently conducted a strategic review of COPD in NWL
- Collaborative effort across ICHP, CLAHRC and key stakeholder groups
- 6 weeks timeframe

## Objectives

- **Develop a common understanding of COPD baseline in North West London**
- **Highlight key areas for action**
- **Agree next steps**
Key messages

COPD is a priority for the UK – a leading cause of death and hospital readmission; significant cost to society
- In NWL, COPD affects ~20k (diagnosed) patients and represents ~£25m direct costs (vs. £98m for CHD, £75m for diabetes); it is the 5th highest cause of 30-day emergency readmission

Despite significant evidence-base, best practices are not applied consistently across care settings
- Components of best practices are: pulmonary rehab, smoking cessation, inhaler technique, flu vaccination (and spirometry in primary care); There are currently no set national standards for the design of some of these components
- Patients are often complex with significant co-morbidities; an integrated pathway across sectors of care is required
- Recent efforts focus on acute care bundle at discharge implemented in 8 hospitals in NWL, supported by CLAHRC and integrated care pilot in primary care

Key gaps to address
- Lack of visibility of what has been commissioned and outcomes across sectors
- High variability in COPD registration and hospital admission rates in primary care
- Secondary-care interventions focused on transition of care at discharge
- Mixed quality and accessibility of pulmonary rehab and smoking cessation across NWL
- Gaps in patient knowledge/engagement and clinical skill set

Recommendation: Apply evidence-based best practices consistently across care settings in NWL, through collaboration across the Partnership in 5 key areas:
1. Providers: Reduce variability; improve interfaces to community-based services; align service location with needs
2. Commissioners: Ensure services are commissioned to match needs, with consistent quality/accessibility; set common standards for pulmonary rehab/smoking cessation; align services & incentives
3. ICHP: Improve access to best practice through primary care; improve understanding of patient behaviour
4. ICHP: Facilitate collaboration & best practice sharing; review/evaluate progress; ensure adequate training for clinicians
5. All: Collect and track outcome data & integrate with other parts of the pathway
A collaborative effort across multiple elements of the Partnership over 6 weeks
In the UK, COPD is one of the leading causes of death, hospital readmission and cost to society

COPD in the UK

835,000 UK patients diagnosed with COPD, with additional ~2 million undiagnosed

Leading cause of death and emergency re-admission
- ~23,000 deaths/year (1 in 20 mins), mainly aged 75+
- Smoking is major risk factor, with higher prevalence in deprived communities

Significant cost of care and to society
- Costs NHS up to £1bn / year, with cost to treat severe COPD > 10x vs. mild disease
- £3.8bn productivity loss; 24m working days lost/year

A priority for Department of Health, with a new action plan for COPD treatment

2. HES data based on HRG codes DZ12 and DZ21
In NWL, prevalence of COPD appears to be lower than UK and London

Hillingdon and Ealing are the two boroughs with prevalence above London’s average

COPD in NWL

~20k patients diagnosed out of population of ~2million
- Compared to ~95,000 with diabetes

NWL boroughs close to London average, and significantly below UK average
- Lower prevalence may be due to variation in diagnosis rates

Local surveys indicate potential for under-diagnosing COPD in primary care
- Modelled COPD rate as high as ~55,000 patients

~3,000 secondary care admissions per year
- 30-day emergency readmissions is < 1,000 per year (~25-35%)
- Seasonal variation with winter peak in acute exacerbations and high levels of associated co-morbidity

Lower figures may also reflect under reporting / diagnosis

1. According to The North West London Diabetes Local Research Network (NWL DLRN); Note: Prevalence data based on number of registered patients in CCG (NHS London Health Programmes), divided by CCG population (NHS Commissioning Board); Source: NHS London Health Programmes, NHS Commissioning Board, JSNA Ealing
NWL CCGs show significant variation in registrations and admissions

1. Variation in COPD admissions within NWL CCGs

- CLAHRC based on data collected from Hospital Episode Statistics Database using the International Classification of Disease 10th version codes J40-44 and 47, which are coded with the patient’s home address.

2. GSK based on data from:

... and also across NWL CCGs

2011-12 COPD Emergency Admissions in NWL LSOAs

All London CCGs COPD patient registrations and admissions

Legend: COPD Emergency Admissions

Legend: Confidence intervals

1. CLAHRC based on data collected from Hospital Episode Statistics Database using the International Classification of Disease 10th version codes J40-44 and 47, which are coded with the patient’s home address.
Within Hounslow CCG, rate of hospital admissions varies from ~10% to 50% of reg. patients across practices

**Case Study: Hounslow**

**Example:** Admission data shows wide variation by GP practice in Hounslow

**High variability in primary care:**
- Graph suggests high variability in primary care potentially due to under-diagnosis, high acute admission rates, mixed levels of patient Inhaler technique and sub-optimal medication

**Recommendations:**
- Embed standardised approach in primary care through spreading integrated care pathway throughout NWL
- Improve inhaler technique and ensure appropriate medication for patient benefit; inhaler and medication costs are a major burden on the NHS

Seasonal profile of COPD admissions suggest the need to increase resources available in the winter.

COPD emergency admissions in NW London (# of admissions)

<table>
<thead>
<tr>
<th>Year</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td># of COPD emergency admissions</td>
<td>2,801</td>
<td>3,005</td>
<td>2,890</td>
<td>3,223</td>
<td>1,036</td>
</tr>
</tbody>
</table>

Rate of emergency admissions in NW London (% of Total)

<table>
<thead>
<tr>
<th>Year</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of total emergency admissions related to COPD in NWL</td>
<td>1.55%</td>
<td>1.63%</td>
<td>1.57%</td>
<td>1.67%</td>
<td>1.81%</td>
</tr>
</tbody>
</table>

Need to match downstream services availability with seasonal needs

Source: HES data provided by Lightfoot
Recent data suggests possible increase in registrations and hospital admissions.

**Total COPD registered patients in NWL**

<table>
<thead>
<tr>
<th>Area</th>
<th>2011</th>
<th>2012</th>
<th>Increase of &gt;7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillingdon</td>
<td>3.2</td>
<td>3.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Hounslow</td>
<td>3.2</td>
<td>3.3</td>
<td>0.1</td>
</tr>
<tr>
<td>K&amp;C</td>
<td>2.6</td>
<td>2.5</td>
<td>0.1</td>
</tr>
<tr>
<td>H&amp;F</td>
<td>2.3</td>
<td>2.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Ealing</td>
<td>2.0</td>
<td>2.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Brent</td>
<td>2.2</td>
<td>2.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Westminster</td>
<td>2.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Harrow</td>
<td>1.9</td>
<td>2.0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**COPD emergency admissions & re-admissions in NWL**

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions</th>
<th>Re-admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009/10</td>
<td>2.80</td>
<td>0.64</td>
</tr>
<tr>
<td>2010/11</td>
<td>3.01</td>
<td>0.66</td>
</tr>
<tr>
<td>2011/12</td>
<td>2.89</td>
<td>0.63</td>
</tr>
<tr>
<td>2012/13</td>
<td>3.22</td>
<td>0.73</td>
</tr>
</tbody>
</table>

Source: NHS London Health Programmes, HES data provided by Lightfoot.
Number of admissions varies significantly across NWL CCGs and providers

Admissions by NWL CCG

# of emergency COPD admissions: 2012-13 – NWL CCG

- Ealing: 488
- Hounslow: 463
- Hillingdon: 449
- Brent: 422
- West London: 413
- Harrow: 346
- Central London: 257
- Hammersmith & Fulham: 215

Source: NHS London Health Programmes, HES data provided by Lightfoot

Admissions by NWL provider

# of emergency COPD admissions: 2012-13 – NWL providers

- Imperial College: 970
- NW London Hospitals: 635
- W. Middlesex: 495
- Hillingdon Hospitals: 463
- ChelWest: 366
- Ealing Hospital: 294

Source: NHS London Health Programmes, HES data provided by Lightfoot
Number of re-admissions varies significantly across NWL CCGs and providers

Re-admissions by NWL CCG

<table>
<thead>
<tr>
<th>CCG</th>
<th>90 days</th>
<th>30 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillingdon</td>
<td>106</td>
<td>80</td>
</tr>
<tr>
<td>Hammership &amp; Fulham</td>
<td>98</td>
<td>59</td>
</tr>
<tr>
<td>Brent</td>
<td>92</td>
<td>62</td>
</tr>
<tr>
<td>Ealing</td>
<td>85</td>
<td>65</td>
</tr>
<tr>
<td>West London</td>
<td>79</td>
<td>58</td>
</tr>
<tr>
<td>Harrow</td>
<td>73</td>
<td>48</td>
</tr>
<tr>
<td>Hounslow</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Central London</td>
<td>38</td>
<td>20</td>
</tr>
</tbody>
</table>

Re-admissions by NWL provider

<table>
<thead>
<tr>
<th>Provider</th>
<th>90 days</th>
<th>30 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial College</td>
<td>191</td>
<td>121</td>
</tr>
<tr>
<td>NW London Hospitals</td>
<td>115</td>
<td>74</td>
</tr>
<tr>
<td>W. Middlesex</td>
<td>107</td>
<td>50</td>
</tr>
<tr>
<td>Hillingdon Hospitals</td>
<td>105</td>
<td>73</td>
</tr>
<tr>
<td>ChelWest</td>
<td>82</td>
<td>40</td>
</tr>
<tr>
<td>Ealing Hospital</td>
<td>47</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: NHS London Health Programmes, HES data provided by Lightfoot
Direct care for COPD costs NWL health economy ~£25M per year, lower than heart disease and diabetes

COPD generates costs of ~£25M per year to NWL health economy...

Obstructive airways diseases cost; 2011-12 (£M)

<table>
<thead>
<tr>
<th></th>
<th>2011-12 (£M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care prescribing</td>
<td>7.9</td>
</tr>
<tr>
<td>Secondary care</td>
<td>8.3</td>
</tr>
<tr>
<td>Community care</td>
<td>6.1</td>
</tr>
<tr>
<td>Other</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>24.8</td>
</tr>
</tbody>
</table>

... Behind heart disease, diabetes, asthma

Budgeting cost in NW London; 2011-12 (£M)

<table>
<thead>
<tr>
<th></th>
<th>2011-12 (£M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary heart disease</td>
<td>98.0</td>
</tr>
<tr>
<td>Diabetes</td>
<td>75.1</td>
</tr>
<tr>
<td>Asthma</td>
<td>27.5</td>
</tr>
<tr>
<td>COPD</td>
<td>24.8</td>
</tr>
</tbody>
</table>

COPD also creates significant non-financial costs (e.g., QALY and lost productivity)

1. Excluding those which relate to prevention/health promotion. 2. Activity included with this setting will include direct access services, unbundled services (excluding critical care) and secondary care services which cannot be allocated to more specific settings. Mental Health secondary care services should also be included within this care setting. 3. Includes prison healthcare, nursing homes, hospice care, continuing care, intermediate care, respite care, free nursing care, social care and learning disability services. 4. Classified in budget as obstructive airways disease.

Source: 2011-12 Programme budgeting PCT benchmarking tool, NHS.
COPD patients are managed across multiple care settings and organisations, with complex interfaces.

Primary care  ➔  Secondary care  ➔  Community based services

Focus of strategic review

Early diagnosis and long term care coordination

Acute management

Pulmonary rehabilitation / smoking cessation

Re-admissions

Interventions in NWL

1. NWL Integrated Care Pilot

2. CLAHRC care bundle

3. Limited visibility of service quality in NWL; lack of standards

While the focus of this review is secondary care, a holistic approach is needed to improve patient outcomes.

1. Includes medication review and inhaler technique. 2. NWL Integrated Care Pilot addresses patients at risk of hospital admission. 3. CLAHRC supported definition of care bundle / implementation in 8 NWL hospitals over 3 year period.
Evidence suggests that holistic (beyond acute setting) approach improves outcomes

### Pulmonary rehabilitation

**Proven best practice for all patients whether from acute setting (CLARHC work) or from community**
- Explicit focus on high quality pulmonary rehabilitation services being available to all patients who meet eligibility criteria across NW London with increased capacity in Winter months
- Improves mortality, quality of life and independence, as well as reducing readmissions (1 life saved for every 6 patients in rehab¹, 1 less admission for every 4 patients in rehab¹, reduced 30 day readmission from 33% to 7%²)
- Studies have shown as cost effective: cost per QALY below £17000 – well within the range which is usually deemed cost-effective by NICE and with 64% probability it is cost saving³

### Smoking cessation

**Getting patients with COPD to stop smoking is one of the single most important interventions⁴**
- Provide great value in the diagnosed and undiagnosed population relative to other interventions²
- Stopping smoking slows the rate of decline with consequent benefits in terms of progression of symptoms and survival⁵
- Smokers with early COPD who were assigned to a smoking cessation intervention had fewer respiratory symptoms after 5 years of follow-up⁶
- Relatively cost effective in terms of the cost per life year saved⁷

### Inhaler technique and medication

**Must focus on correct inhaler technique and monitor medication to improve patient care and reduce costs**
- COPD & asthma medication costs the NHS £1bn per year⁸; non adherence estimated at 30-70 & and >30% of patients on sub-optimal therapy⁸
- Ensuring that medicines are clinically appropriate, cost effective and acceptable to the patient can reduce waste, save money and improve outcomes for patients⁸
- Assessment of inhaler technique is often neglected, both in individual patient terms⁴
- Regular reassessment and reinstruction is essential - many patients who successfully acquire adequate technique with a particular device will demonstrate inadequate technique when assessed a month later⁹

### Spirometry

**Cost effective test for early diagnosis of COPD when implemented and interpreted correctly**
- Spirometry is an effective test for the diagnosis of COPD and allows for early diagnosis and self management¹²
- It forms a key part of the NICE best practice guidance as it is considered „an enabler“ for other interventions along the COPD pathway⁴
- Training staff is essential to ensure correct use and interpretation of spirometry¹³

### Flu/ Influenza vaccination

**Offers an effective way to reduce the frequency of exacerbations**
- Flu vaccination provides lowest cost per QALY of COPD treatments with £1’000/QALY in "at risk population"¹¹
- Studies have shown that it offers an effective treatment to reduce the frequency of exacerbations¹⁴

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Primary Care: NW London Integrated Care Pilot is being extended to COPD and Cardiac

Initial focus on diabetic patients and the >75s
- 5 London boroughs
- Brings together acute, primary care, community and social care
- Integrates care for population of >75s and patients with diabetes
- 70 Case conferences and 347 patient discussions (out of 3,000 patients in the care plan)

Now extending to COPD and cardiac
- Initial patient pathway has been developed
- Collaborative effort with representation from multiple organisations
- Harrow CCG has already approved the COPD business plan

COPD process includes 3 phases
- GPs enrolled in the ICP provided with list of COPD patients
- Patients contacted to participate in screening & consultation
- Depending on the patient assessment, an appropriate care plan is developed

1. Collaboration of Northwick Park Hospital, Imperial College Healthcare NHS Trust and Respiratory Clinical Lead Harrow.; Source: Harrow COPD Inaugural, April 2013
Acute care: CLAHRC implemented a care bundle focusing on discharge processes at interface of care...

### Approach

#### What is a care bundle?
- Consists of 4-6 priority elements that deliver improved outcomes for patients when systematically implemented together.
- It should be personalised to the individual – not all components are needed for everyone.
- Completed within a defined timescale and geography.

#### Why a care bundle?
- Provides a means to measure compliance\(^1\).
- Utilises evidence-base – iterative.
- Building on the IHI\(^2\) definition care bundles do not replace clinical judgement and are not a check list.

### COPD Discharge Care Bundle for Acute Exacerbations

#### What does it include?
1. Provide smoking cessation
2. Assess and refer for pulmonary rehabilitation
3. Review inhaler technique plus education
4. Provide patient information
5. Pre-define follow-up arrangements (community, outpatients)

#### Who does it target?
- Every patient admitted with an acute COPD exacerbation for over 48 hours.
- Implemented in 8 NWL hospitals over 3 year period (in addition to other hospitals outside NW London).

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**7 Hospitals in NWL have been provided with implementation support by CLAHRC during initial 18 months**

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2. NHS Institute for Innovation and Improvement.

Source: CLAHRC
Patient engagement essential for care provision
Need to improve understanding of drivers for patient behaviour and engagement

"You feel like you are dying, you just cannot breathe."

"When you have COPD, everything, everything changes - As it gets worse, you seem to be able to do less and less of the things you have always done."

"The courses I've been to are very helpful – so you have someone next to you all the time who is kind of guiding you."

"The Doctors have been very honest with me, telling me what they believe my prospects are."

"People around you they see it. They... they treat you different."

Source: CLAHRC

Need to further improve understanding of drivers for patient behaviour and engagement given high attrition
Completion of the pathway is difficult to achieve but a more systematic approach can yield results.

**Case Study Hillingdon:**
~15% eligible patients complete rehab

<table>
<thead>
<tr>
<th>Discharged w/ AECOPD</th>
<th>Patient not eligible</th>
<th>Patients not referred</th>
<th>Patient didn't attend/complete</th>
<th>Patient Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>448</td>
<td>162</td>
<td>196</td>
<td>47</td>
<td>43</td>
</tr>
</tbody>
</table>

15% complete

**Case Study ICH:**
~27% eligible patients complete rehab

<table>
<thead>
<tr>
<th>Discharged w/ AECOPD</th>
<th>Patient not eligible</th>
<th>Patients not referred</th>
<th>Patient didn't attend/complete</th>
<th>Patient Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,421</td>
<td>652</td>
<td>389</td>
<td>171</td>
<td>209</td>
</tr>
</tbody>
</table>

27% complete

**Potential to improve take-up and ensure that good practice is comprehensively available and administered**

1. Assumed 55% completion rate based on existing case studies
Note: AECOPD = Acute exacerbation of chronic obstructive pulmonary disease.
Source: Jones et al (2013)
Mixed pulmonary rehab and smoking cessation provision and standards across NWL

Smoking cessation services concentrated in area with lower prevalence

Similar picture is seen for pulmonary rehabilitation

Examples of mixed service standards
- **Availability**: Pulmonary rehabilitation only recently commissioned in Harrow
- **Quality**: Harefield offers gold standard pulmonary rehab; interviews suggest other services may not have same quality
- **National standards**: Lack of standards make it difficult to assess quality of services

Source: NHS CCG postcode data, internet research for smoking cessation and pulmonary rehabilitation services in NW London CCGs, CLAHRC, Interviews
Key gaps to address

Lack of consistent data on activities and outcomes for ~20k patients with COPD across NW London

Variability in COPD registration and hospital admission rates in primary care

Secondary-care interventions focused on discharge with limited ongoing accountability for care outcomes

Mixed quality and accessibility of pulmonary rehab and smoking cessation across NWL, limited knowledge of quality of inhaler advice¹

Gaps in patient knowledge/engagement and clinical training

¹. Services have historically not always been provisioned/available; when provisioned they are not always close to the patient / in areas of greatest need; mixed quality of PR services across NWL, ranging from gold standard service in Harefield and anecdotal evidence from interviews suggesting that other services do not have the same quality; benchmark is difficult to qualify because there is not yet a national standard in place.
Recommendation: Apply evidence-based best practices consistently across care settings in NWL

Apply best practices

Across all care settings

Through 5 Areas for Action

Best Practices
1. Pulmonary rehab
2. Smoking cessation
3. Inhaler technique
4. Flu vaccination
5. Spirometry

Primary care
Secondary care
Community-based services

1. Reduce variability of service provision
   Providers

2. Ensure services commissioned to match needs, with consistent quality/accessibility
   Commissioners
   Set common standards for pulm. rehab/smoking cessation; align services & incentives

3. Improve access to best practice through primary care; improve underst. of drivers for patient behaviour and engagement to enable self-management
   ICHP

4. Facilitate collaboration and best practice sharing; review and evaluate progress and work with LETB to ensure adequate levels of training and education for clinicians
   ICHP

5. Collect and track outcome data & integrate with other parts of the pathway
   All

1. Primary care only; 2. Pulmonary rehab; Smoking cessation; Inhaler technique and Flu vaccination
3. Reflecting current development of national standards where applicable.
Implementing these recommendations could deliver lasting value and impact

**Translate leading research into practice**
- Achieve real and lasting healthcare transformation for patients by translating research into practice
- Set the benchmark for the treatment of lifetime conditions in the UK and internationally

**Diffuse best practices, including pulmonary rehabilitation, smoking cessation and inhaler technique**
- Improve interfaces between care settings
- Provide integrated care by unifying commissioning
- Ensure that holistic (beyond acute setting) approach is implemented to improve patient outcome, including smoking cessation, pulmonary rehab, inhaler technique, flu vaccination and spirometry

**Engage key stakeholders**
- Raise awareness with clinical staff across care settings
- Educate patients on benefits of holistic approach, including pulmonary rehabilitation, smoking cessation, pulmonary rehab, inhaler technique, flu vaccination and spirometry

**Improve quality of life for patients**
- Severe disease affects activities of daily living e.g. getting dressed, washing, climbing stairs
- Pulmonary rehabilitation improves mortality, quality of life & independence, reducing readmissions
- Flu vaccination and smoking cessation cost £1k and £2k/QALY respectively, reducing the likelihood of respiratory symptoms

**Lower cost**
- One hospital trust demonstrative indicative cost savings of £80-120k
- Imperial Business School identified of £20k-1270k, partially offset by an increase in costs of £24k-40k