

# National Lung Matrix Trial: multi-drug phase II trial in non-small cell (NSC) lung cancer

<b>Submission date</b> 10/06/2015	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 10/06/2015	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 02/07/2025	<b>Condition category</b> Cancer	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

<http://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-trial-looking-at-different-drugs-for-non-small-cell-lung-cancer-national-lung-matrix-trial>

## Study website

<https://www.birmingham.ac.uk/MATRIX>

## Contact information

### Type(s)

Scientific

### Contact name

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## Additional identifiers

EudraCT/CTIS number

2014-000814-73

**IRAS number**

**ClinicalTrials.gov number**

NCT02664935

**Secondary identifying numbers**

CPMS 17746

## Study information

### Scientific Title

National Lung Matrix Trial: multi--drug, genetic marker-directed, non--comparative, multi--centre, multi--arm phase II trial in non-small cell lung cancer

### Acronym

NLMT

### Study objectives

The trial consists of a series of parallel multi-centre single arm Phase II trial arms, each testing an experimental targeted drug in a population stratified by multiple pre-specified actionable target putative biomarkers. The primary objective is to evaluate whether there is a signal of activity in each drug-(putative)biomarker cohort separately. A Bayesian adaptive design is adopted to achieve this objective. The trial is primarily an enrichment putative biomarker design, including patients who are positive for at least one of the actionable targets included in the trial. Patients who are positive for just one putative biomarker will receive the experimental targeted drug specific for that putative biomarker. Putative biomarkers within each drug cohort have been chosen such that in the majority of cases it is not expected that patients will be positive for two or more putative biomarkers within the same drug. In the rare situation that patients are positive for two or more putative biomarkers relevant across different drugs, treatment will be allocated in accordance with the following strategy:

1. All amplifications and rearrangements will be treated with targeted agent appropriate to them irrespective of concomitant mutations. This will yield crucial predictive biomarker information.
2. For concomitant mutations decisions will be made by the Chief Investigator on a case-by-case basis and based on close consideration of pathway preference and likely dominance of one signal pathway over another together with any pre-clinical efficacy studies that address the activity of the drugs in the presence of concomitant mutations.

A secondary objective of the trial is to provide the opportunity for industrial partners to test novel agents in the cohort of patients who are not positive for any of the actionable targets in the trial, referred to as the no actionable genetic change arm.

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

NRES Committee South Central – Oxford C Research Ethics Committee, 18/12/2014, ref: 14/SC/1346

### Study design

Non-randomized; Interventional; Design type: Not specified, Treatment

### **Primary study design**

Interventional

### **Secondary study design**

Non randomised study

### **Study setting(s)**

Hospital

### **Study type(s)**

Treatment

### **Participant information sheet**

<http://www.birmingham.ac.uk/research/activity/mds/trials/crctu/trials/matrix/investigators.aspx>

### **Health condition(s) or problem(s) studied**

Non-small cell lung cancer

### **Interventions**

Current intervention as of 12/06/2019:

1. Arm A - FGFR Inhibitor; AZD4547 - closed to recruitment
2. Arm B - MTORC1/2 Inhibitor; Vistusertib (AZD2014)
3. Arm C - CDK4/6 Inhibitor; Palbociclib
4. Arm D - ALK Inhibitor; Crizotinib
5. Arm E - MEK inhibitor in combination with Docetaxel; Selumetinib and Docetaxel
6. Arm F – AKT Inhibitor; AZD5363 - closed to recruitment
7. Arm G – EGFR mutation positive T790M+ Inhibitor; Osimertinib (AZD9291) - closed to recruitment
8. Arm H – Sitravatinib - closed to recruitment
9. Arm NA - Anti-PDL1; Durvalumab (MEDI4736) - closed to recruitment
10. Arm J - AZD6738 + Durvalumab (MEDI4736)

Previous intervention as of 14/03/2019:

1. Arm A - FGFR Inhibitor; AZD4547
2. Arm B - MTORC1/2 Inhibitor; Vistusertib (AZD2014)
3. Arm C - CDK4/6 Inhibitor; Palbociclib
4. Arm D - ALK Inhibitor; Crizotinib
5. Arm E - MEK inhibitor in combination with Docetaxel; Selumetinib and Docetaxel
6. Arm F – AKT Inhibitor; AZD5363
7. Arm G – EGFR mutation positive T790M+ Inhibitor; Osimertinib (AZD9291)
8. Arm H – Sitravatinib
9. Arm NA - Anti-PDL1; Durvalumab (MEDI4736)

Previous intervention as of 21/09/2016:

1. Arm A - FGFR Inhibitor; AZD4547
2. Arm B - MTORC1/2 Inhibitor; Vistusertib (AZD2014)
3. Arm C - CDK4/6 Inhibitor; Palbociclib
4. Arm D - ALK Inhibitor; Crizotinib
5. Arm E - MEK inhibitor in combination with Docetaxel; Selumetinib and Docetaxel

6. Arm F – AKT Inhibitor; AZD5363
  7. Arm G – EGFR mutation positive T790M+ Inhibitor; Osimertinib (AZD9291)
  8. Arm NA Cohort NA1 - Anti-PDL1; Durvalumab (MEDI4736)
- Study Entry : Registration only

Initial:

1. AZD2014, Arm B - MTORC1/2 Inhibitor; AZD4547
  2. Arm A - FGFR Inhibitor; Crizotinib
  3. Arm D - ALK Inhibitor; MEDI4736
  4. Arm NA Cohort NA1 - Anti-PDL1; Palbociclib
  5. Arm C - CDK4/6 Inhibitor; Selumetinib and Docetaxel
  6. Arm E - MEK inhibitor in combination with Docetaxel
- Study Entry : Registration only

## **Intervention Type**

Drug

## **Phase**

Phase II

## **Drug/device/biological/vaccine name(s)**

AZD4547, vistusertib (AZD2014), palbociclib, crizotinib, selumetinib, docetaxel, durvalumab (MEDI4736), AZD5363, osimertinib (AZD9291), sitravatinib (MGCD516), AZD6738

## **Primary outcome measure**

Current primary outcome measures as of 14/03/2019; updated 12/06/2020 to add Arm J:

1. Objective response (OR) – Arms A, B, D, E, F, G, H, NA, J
2. Durable clinical benefit (DCB) – Arms A, B, D, E, F, H, NA, J
3. Progression-free survival time (PFS) – Arm C

Previous primary outcome measures:

Best objective response (BOR); Timepoint(s): Patients will have CT scans every 6 weeks from baseline until disease progression

## **Secondary outcome measures**

Current secondary outcome measures as of 14/03/2019:

1. Best percentage change in sum of target lesion diameters (PCSD)
2. Time to Progression (TTP)
3. Overall survival time (OS)
4. Adverse events (AE)

Previous secondary outcome measures:

1. Best percentage change in sum of target lesion diameters (PCSD)
2. Overall survival time (OS)
3. Progression-free survival time (PFS)
4. Time to Progression (TTP)
5. Adverse events

Added 14/02/2017:

6. Durable clinical benefit (DCB)

**Overall study start date**

31/03/2015

**Completion date**

31/03/2023

## Eligibility

**Key inclusion criteria**

Current inclusion criteria as of 14/03/2019:

Core inclusion criteria are presented below. Additional inclusion criteria apply to each arm and are presented in the relevant arm supplement in the trial protocol.

**1. Prior anti-cancer treatment:**

1.1. Patients who refuse any standard-of-care first-line therapy are eligible to receive National Lung Matrix Trial treatment as first-line therapy, providing they explicitly consent to this effect

1.2. Patients who have previously consented to and received standard-of-care first-line therapy must have completed all standard-of-care therapy that the treating oncologist thinks is appropriate. As a minimum patients must have failed one or more lines of treatment (either radiological documentation of disease progression or due to toxicity). Patients whose disease has increased in size but is not classed as progressive disease as per RECIST criteria, will be eligible. Patients with no change at all in dimension of disease (i.e. true stability) after first-line therapy will not be eligible.

1.3. Patients who have progressed after surgical resection and adjuvant therapy will be eligible for entry without the need for the administration of first-line metastatic therapy

1.4. Patients will also be eligible without the necessity for first line regimen if they have relapsed within 6 months of completion of definitive chemoradiation

**2. Consented and provided an adequate specimen to adequately characterise the molecular genotype of the tumour in the molecular pre-screening according to the molecular exclusion rules**

3. Histological or cytologically confirmed NSCLC stage III (not suitable for radical radiotherapy or surgery) or stage IV. This includes patients who may have abnormal histology, but IHC strongly support either squamous cell carcinoma (p63 positivity) or adenocarcinoma (Thyroid transcription factor 1 [TTF1] positivity). If a physician and pathologist are convinced after multi-disciplinary review that the patient has stage III or IV NSCLC but where all the IHC is negative and the morphology does not distinguish a specific sub-type, these patients will be eligible for non-histology specific cohorts.

4. CT or MRI scan of head, chest and abdomen within 28 days of treatment demonstrating measurable disease as per RECIST version 1.1. (The same imaging modality must be used throughout treatment).

**5. Adequate haematological function within 7 days of treatment:**

5.1. Haemoglobin  $\geq 90$  g/l

5.2. Absolute neutrophil count (ANC)  $\geq 1.5 \times 10^9$ /l

5.3. Platelets  $\geq 100 \times 10^9$ /l

6. Adequate hepatic function within 7 days of treatment in patients with no liver metastasis (see arm-specific entry criteria for adequate hepatic function in patients with liver metastases):

6.1. Total serum bilirubin  $\leq 1.5 \times$  upper limit of normal (ULN). (Note that this will not apply to patients with confirmed Gilbert's syndrome (persistent or recurrent hyperbilirubinemia that is predominantly unconjugated in the absence of evidence of haemolysis or hepatic pathology), who may be allowed inclusion at the discretion of the local Investigator).

6.2. Alanine transferase (ALT)  $\leq 2.5 \times$  ULN

6.3. Aspartate transferase (AST)  $\leq 2.5 \times$  ULN

7. Adequate renal function within 7 days of treatment:

7.1. Creatinine clearance (CLcr) >50 ml/min (measured or calculated by Cockcroft and Gault equation). If calculated CLcr is <50 ml/min a direct measurement of glomerular filtration rate (GFR) such as EDTA may be performed. If the value is >50 ml/min the patient is eligible.

8. Aged  $\geq 18$  years

9. Females must agree to use adequate contraceptive measures, should not be breast feeding and must have a negative pregnancy test prior to start of dosing if of child-bearing potential or must have evidence of non-child-bearing potential by fulfilling one of the following criteria at screening:

9.1. Post-menopausal defined as aged more than 50 years and amenorrhoeic for at least 12 months following cessation of all exogenous hormonal treatments

9.2. Documentation of irreversible surgical sterilisation by hysterectomy, bilateral oophorectomy or bilateral salpingectomy but not tubal ligation

9.3. Women aged under 50 years old would be considered postmenopausal if they have been amenorrhoeic for 12 months or more following cessation of exogenous hormonal treatments and with luteinizing hormone (LH) and follicle stimulating hormone (FSH) levels in the post-menopausal range for the institution

10. Provision of signed and dated, written informed consent prior to any study specific procedures, sampling and analyses

Previous inclusion criteria as of 12/12/2016:

1. Patients must have completed all standard of care therapy that the treating oncologist thinks is appropriate. As a minimum patients must have failed one or more lines of treatment (either radiological documentation of disease progression or due to toxicity)

2. Patients who have progressed after surgical resection and adjuvant therapy will be eligible for entry without the need for the administration of first line metastatic therapy

3. Patients will also be eligible without the necessity for first line regimen if they have relapsed within 6 months of completion of definitive chemoradiation

4. Consented and provided an adequate specimen to completely characterise the molecular phenotype of the tumour in the molecular pre-screening (SMP2) according to the molecular exclusion rules

5. Histological or cytologically confirmed NSCLC stage III (not suitable for radical radiotherapy or surgery) or stage IV. This includes patients who may have abnormal histology, but IHC strongly support either squamous cell carcinoma (p63 positivity) or adenocarcinoma (Thyroid transcription factor 1 [TTF1] positivity). If a physician and pathologist are convinced after multi-disciplinary review that the patient has stage III or IV NSCLC but where all the IHC is negative and the morphology does not distinguish a specific sub-type, these patients will be eligible for non-histology specific cohorts

6. CT scan of head, chest and abdomen within 28 days of treatment demonstrating measurable disease as per RECIST version 1.1

7. Adequate haematological function within 7 days of treatment

7.1. Haemoglobin  $\geq 90$  g/L

7.2. Absolute neutrophil count (ANC)  $\geq 1.5 \times 10^9/L$ .

7.3. Platelets  $\geq 100 \times 10^9/L$

8. Adequate hepatic function within 7 days of treatment in patients with no liver metastasis (see arm specific entry criteria for adequate hepatic function in patients with liver metastases)

8.1. Total serum bilirubin  $\leq 1.5 \times$  upper limit of normal (ULN). (Note that this will not apply to patients with confirmed Gilbert's syndrome (persistent or recurrent hyperbilirubinemia that is predominantly unconjugated in the absence of evidence of haemolysis or hepatic pathology), who may be allowed inclusion at the discretion of the local Investigator)

8.2. Alanine transferase (ALT)  $\leq 2.5 \times$  ULN

8.3. Aspartate transferase (AST)  $\leq 2.5 \times$  ULN

9. Adequate renal function within 7 days of treatment.

9.1. Creatinine <1.5 times ULN concurrent with creatinine clearance (CLcr) >50 ml/min (measured or calculated by Cockcroft and Gault equation). If calculated CLcr is <50 ml/min a direct measurement of glomerular filtration rate (GFR) such as EDTA may be performed. If the value is ≥50 ml/min the patient is eligible

10. Age ≥ 18 years

11. Females must agree to use adequate contraceptive measures (as defined in Section 6.3), should not be breast feeding and must have a negative pregnancy test prior to start of dosing if of child-bearing potential or must have evidence of non-child-bearing potential by fulfilling one of the following criteria at screening:

11.1. Post-menopausal defined as aged more than 50 years and amenorrhoeic for at least 12 months following cessation of all exogenous hormonal treatments

11.2. Documentation of irreversible surgical sterilisation by hysterectomy, bilateral oophorectomy or bilateral salpingectomy but not tubal ligation

11.3. Women aged under 50 years old would be considered postmenopausal if they have been amenorrhoeic for 12 months or more following cessation of exogenous hormonal treatments and with luteinizing hormone (LH) and follicle stimulating hormone (FSH) levels in the post-menopausal range for the institution.

12. Provision of signed and dated, written informed consent prior to any study specific procedures, sampling and analyses

Previous inclusion criteria from 02/09/2015 to 12/12/2016:

1. Patients must have completed all standard of care therapy that the treating oncologist thinks is appropriate. As a minimum patients must have failed one or more lines of treatment (either radiological documentation of disease progression or due to toxicity)

2. Patients who have progressed after surgical resection and adjuvant therapy will be eligible for entry without the need for the administration of first line metastatic therapy, if they have progressed within 6 months of completing their adjuvant treatment

3. Patients will also be eligible without the necessity for first line regimen if they have relapsed within 6 months of completion of definitive chemoradiation

4. Consented and provided an adequate specimen to completely characterise the molecular phenotype of the tumour in the molecular pre-screening (SMP2) according to the molecular exclusion rules

5. Histological or cytologically confirmed NSCLC stage III (not suitable for radical radiotherapy or surgery) or stage IV. This includes patients who may have abnormal histology, but IHC strongly support either squamous cell carcinoma (p63 positivity) or adenocarcinoma (Thyroid transcription factor 1 [TTF1] positivity). If a physician and pathologist are convinced after multi-disciplinary review that the patient has stage III or IV NSCLC but where all the IHC is negative and the morphology does not distinguish a specific sub-type, these patients will be eligible for non-histology specific cohorts

6. CT scan of head, chest and abdomen within 28 days of treatment demonstrating measurable disease as per RECIST version 1.1

7. Adequate haematological function within 7 days of treatment

7.1. Haemoglobin ≥ 90 g/L

7.2. Absolute neutrophil count (ANC) ≥ 1.5 × 10<sup>9</sup>/L.

7.3. Platelets ≥ 100 × 10<sup>9</sup>/L

8. Adequate hepatic function within 7 days of treatment in patients with no liver metastasis (see arm specific entry criteria for adequate hepatic function in patients with liver metastases).

8.1. Total serum bilirubin ≤ 1.5 x upper limit of normal (ULN)

8.2. Alanine transferase (ALT) ≤ 2.5 x ULN

8.3. Aspartate transferase (AST) ≤ 2.5 x ULN

9. Adequate renal function within 7 days of treatment.

- 9.1. Creatinine <1.5 times ULN concurrent with creatinine clearance (CLcr) >50 ml/min (measured or calculated by Cockcroft and Gault equation)
10. Age  $\geq$  18 years
11. Females must agree to use adequate contraceptive measures (as defined in Section 6.3), should not be breast feeding and must have a negative pregnancy test prior to start of dosing if of child-bearing potential or must have evidence of non-child-bearing potential by fulfilling one of the following criteria at screening:
  - 11.1. Post-menopausal defined as aged more than 50 years and amenorrhoeic for at least 12 months following cessation of all exogenous hormonal treatments
  - 11.2. Documentation of irreversible surgical sterilisation by hysterectomy, bilateral oophorectomy or bilateral salpingectomy but not tubal ligation
  - 11.3. Women aged under 50 years old would be considered postmenopausal if they have been amenorrhoeic for 12 months or more following cessation of exogenous hormonal treatments and with luteinizing hormone (LH) and follicle stimulating hormone (FSH) levels in the post-menopausal range for the institution.
12. Provision of signed and dated, written informed consent prior to any study specific procedures, sampling and analyses

Original inclusion criteria:

1. Patients must have completed all standard of care therapy that the treating oncologist thinks is appropriate. As a minimum patients must have failed one or more lines of treatment (either radiological documentation of disease progression or due to toxicity)
2. Consented and provided an adequate specimen to completely characterise the molecular phenotype of the tumour in SMP2
3. Histological or cytologically confirmed NSCLC stage III (not suitable for radical radiotherapy or surgery) or stage IV. This includes patients who may not have clear morphology, but IHC strongly support either squamous cell carcinoma (p63 positivity) or adenocarcinoma (Thyroid transcription factor 1 [TTF1] positivity). If a physician and pathologist are convinced after multi-disciplinary review that the patient has stage III or IV NSCLC but where all the IHC is negative and the morphology does not distinguish a specific sub-type, these patients will be eligible for non-histology specific cohorts.
4. CT scan of head, chest and abdomen within 28 days of treatment demonstrating measurable disease as per RECIST version 1.1
5. Eastern Cooperative Oncology Group (ECOG) Performance Status =1 with no deterioration over the previous 2 weeks
6. Adequate haematological function within 7 days of treatment
  - 6.1. Haemoglobin = 90 g/L
  - 6.2. Absolute neutrophil count (ANC) =  $1.5 \times 10^9$ /L
  - 6.3 Platelets =  $100 \times 10^9$ /L
7. Adequate hepatic function within 7 days of treatment
  - 7.1. Total serum bilirubin = 1.5 x upper limit of normal (ULN)
  - 7.2. Alanine transferase (ALT) = 2.5 x ULN
  - 7.3. Aspartate transferase (AST) = 2.5 x ULN
8. Adequate renal function within 7 days of treatment
  - 8.1. Creatinine <1.5 times ULN concurrent with creatinine clearance (CLcr) >50 ml/min (measured or calculated by Cockcroft and Gault equation)
9. Age at least 18 years
10. Provision of signed and dated, written informed consent prior to any study specific procedures, sampling and analyses
11. Target Gender: Male & Female

**Participant type(s)**



Patient

**Age group**

Adult

**Lower age limit**

18 Years

**Sex**

Both

**Target number of participants**

Planned Sample Size: 610; UK Sample Size: 610

**Total final enrolment**

423

**Key exclusion criteria**

Current exclusion criteria as of 14/03/2019:

Core exclusion criteria are presented below. Additional exclusion criteria apply to each arm and are presented in the relevant arm supplement in the trial protocol.

1. Major surgery (excluding placement of vascular access) within 4 weeks prior to treatment
2. Nausea, vomiting, chronic gastrointestinal diseases (e.g. inflammatory bowel disease) that would preclude adequate absorption
3. Any psychological, familial, sociological or geographical condition hampering protocol compliance
4. Concurrent malignancies or invasive cancers diagnosed within past 3 years except for adequately treated basal cell carcinoma of the skin and in situ carcinoma of the uterine cervix
5. Judgement by the local Investigator that the patient should not participate in the study if the patient is unlikely to comply with study procedures, restrictions and requirements
6. Any unresolved toxicity of grade 2, 3 or 4 from previous treatment (excluding alopecia) at Registration (see CTCAE Toxicity Criteria Gradings)
7. Patients who have previous symptomatic brain metastases or spinal cord compression are excluded unless they have had adequate treatment, no evidence of progression or symptoms, and have had no requirement for steroid treatment in the previous 28 days before commencement of trial treatment
8. Patients with asymptomatic brain metastases picked up at screening CT scan are not excluded providing that in the view of the local Investigator they do not require immediate radiotherapy or surgical intervention, and have had no requirement for steroid treatment in the previous 28 days before commencement of trial treatment
9. As judged by the local Investigator, any evidence of severe or uncontrolled systemic diseases, including active bleeding diatheses, or active infection including hepatitis B, hepatitis C and human immunodeficiency virus. Screening for chronic conditions is not required.
10. Pregnant and lactating patients (patients of childbearing potential must have a negative pregnancy test prior to registration)

Cardiac exclusion criteria, performance status and prior treatment washout periods are detailed within the National Lung Matrix Trial arm-specific eligibility criteria.

Previous exclusion criteria as of 12/12/2016:

1. Major surgery (excluding placement of vascular access) within 4 weeks prior to treatment

2. Nausea, vomiting, chronic gastrointestinal diseases (e.g. inflammatory bowel disease) that would preclude adequate absorption
3. Any psychological, familial, sociological or geographical condition hampering protocol compliance.
4. Concurrent malignancies or invasive cancers diagnosed within past 3 years except for adequately treated basal cell carcinoma of the skin and in situ carcinoma of the uterine cervix
5. Judgement by the local investigator that the patient should not participate in the study if the patient is unlikely to comply with study procedures, restrictions and requirements
6. Any unresolved toxicity of grade 2, 3 or 4 from previous treatment (excluding alopecia) at Registration.
7. Patients who have previous symptomatic brain metastases or spinal cord compression are excluded unless they have had adequate treatment, no evidence of progression or symptoms, and have had no requirement for steroid treatment in the previous 28 days before commencement of trial treatment
8. Patients with asymptomatic brain metastases picked up at screening CT scan are not excluded providing that in the view of the local investigator they do not require immediate radiotherapy or surgical intervention, and have had no requirement for steroid treatment in the previous 28 days before commencement of trial treatment
9. As judged by the local investigator, any evidence of severe or uncontrolled systemic diseases, including active bleeding diatheses, or active infection including hepatitis B, hepatitis C and human immunodeficiency virus. Screening for chronic conditions is not required
10. Pregnant or breast-feeding women

Cardiac exclusion criteria, performance status and prior treatment washout periods are detailed within The National Lung Matrix Trial arm-specific eligibility criteria.

Previous exclusion criteria from 02/09/2015 to 12/12/2016:

1. Major surgery (excluding placement of vascular access), chemotherapy, radiotherapy, any investigational agents or other anti-cancer therapy within 4 weeks prior to treatment
2. Nausea, vomiting, chronic gastrointestinal diseases (e.g. inflammatory bowel disease) that would preclude adequate absorption
3. Any psychological, familial, sociological or geographical condition hampering protocol compliance.
4. Concurrent malignancies or invasive cancers diagnosed within past 3 years except for adequately treated basal cell carcinoma of the skin and in situ carcinoma of the uterine cervix
5. Judgement by the investigator that the patient should not participate in the study if the patient is unlikely to comply with study procedures, restrictions and requirements
6. Any unresolved toxicity of grade 2, 3 or 4 from previous treatment (excluding alopecia) at Registration.
7. Patients who have previous symptomatic brain metastases or spinal cord compression are excluded unless they have had adequate treatment, no evidence of progression or symptoms, and have had no requirement for steroid treatment in the previous 28 days before commencement of trial treatment
8. Patients with asymptomatic brain metastases picked up at screening CT scan are not excluded providing that in the view of the investigator they do not require immediate radiotherapy or surgical intervention, and have had no requirement for steroid treatment in the previous 28 days before commencement of trial treatment
9. As judged by the investigator, any evidence of severe or uncontrolled systemic diseases, including active bleeding diatheses, or active infection including hepatitis B, hepatitis C and human immunodeficiency virus. Screening for chronic conditions is not required
10. Pregnant or breast-feeding women

Cardiac exclusion criteria and performance status eligibility criteria are detailed within The National Lung Matrix Trial arm-specific eligibility criteria.

Original exclusion criteria:

1. Major surgery (excluding placement of vascular access), chemotherapy, radiotherapy, any investigational agents or other anti-cancer therapy within 4 weeks prior to treatment.
2. Nausea, vomiting, chronic gastrointestinal diseases (e.g. inflammatory bowel disease) that would preclude adequate absorption
3. Any psychological, familial, sociological or geographical condition hampering protocol compliance.
4. Concurrent malignancies or invasive cancers diagnosed within past 5 years except for adequately treated basal cell carcinoma of the skin and in situ carcinoma of the uterine cervix
5. Judgement by the investigator that the patient should not participate in the study if the patient is unlikely to comply with study procedures, restrictions and requirements
6. Any unresolved toxicity of grade 2, 3 or 4 from previous treatment (excluding alopecia) at Registration
7. Spinal cord compression or brain metastases unless asymptomatic, treated and stable and not requiring steroids for at least 28 days prior to registration
8. As judged by the investigator, any evidence of severe or uncontrolled systemic diseases, including active bleeding diatheses, or active infection including hepatitis B, hepatitis C and human immunodeficiency virus. Screening for chronic conditions is not required
9. Patients and patients with partners of childbearing potential not willing to use effective contraception during the trial period and for at least 90 days after completion of treatment
10. Female patients of child bearing potential should be using adequate contraceptive measures, should not be breast feeding and must have a negative pregnancy test prior to registration
11. Female patients of non-child-bearing potential are excluded unless they fulfil one of the following criteria at screening:
  - 11.1 Post-menopausal defined as aged more than 50 years and amenorrhoeic for at least 12 months following cessation of all exogenous hormonal treatments
  - 11.2 Documentation of irreversible surgical sterilisation by hysterectomy, bilateral oophorectomy or bilateral salpingectomy but not tubal ligation
  - 11.3 Women aged under 50 years old would be consider postmenopausal if they have been amenorrhoeic for 12 months or more following cessation of exogenous hormonal treatments and with luteinizing hormone (LH) and follicle stimulating hormone (FSH) levels in the post-menopausal range for the institution

**Date of first enrolment**

31/03/2015

**Date of final enrolment**

31/10/2021

## Locations

**Countries of recruitment**

England

United Kingdom

**Study participating centre**  
**Cancer Research UK Clinical Trials Unit**  
Institute of Cancer and Genomic Sciences  
University of Birmingham  
Edgbaston  
Birmingham  
United Kingdom  
B15 2TT

## **Sponsor information**

**Organisation**  
University of Birmingham

**Sponsor details**  
Early Drug Development Team  
Cancer Research UK Clinical Trials Unit  
Institute of Cancer and Genomic Sciences  
University of Birmingham  
Edgbaston  
Birmingham  
England  
United Kingdom  
B15 2TT

**Sponsor type**  
University/education

**Website**  
[www.birmingham.ac.uk/MATRIX](http://www.birmingham.ac.uk/MATRIX)

**ROR**  
<https://ror.org/03angcq70>

## **Funder(s)**

**Funder type**  
Industry

**Funder Name**  
AstraZeneca

**Alternative Name(s)**  
AstraZeneca PLC, Pearl Therapeutics

**Funding Body Type**

Government organisation

**Funding Body Subtype**

For-profit companies (industry)

**Location**

United Kingdom

**Funder Name**

Cancer Research UK

**Alternative Name(s)**

CR\_UK, Cancer Research UK - London, CRUK

**Funding Body Type**

Private sector organisation

**Funding Body Subtype**

Other non-profit organizations

**Location**

United Kingdom

**Funder Name**

Pfizer

**Alternative Name(s)**

Pfizer Inc., Pfizer Consumer Healthcare, Davis, Charles Pfizer & Company, Warner-Lambert, King Pharmaceuticals, Wyeth Pharmaceuticals, Seagen

**Funding Body Type**

Government organisation

**Funding Body Subtype**

For-profit companies (industry)

**Location**

United States of America

**Funder Name**

Mirati Therapeutics

# Results and Publications

## Publication and dissemination plan

1. G Middleton, S Popat, P Fletcher, Y Summers, A Greystoke, D Gilligan, J Cave, N O'Rourke, A Brewster, E Toy, J Spicer, J Savage, R Sharpe, T Yap, C Swanton, L Billingham; National Lung Matrix Trial (NLMT): First Results from an Umbrella Phase II Trial in Advanced Non-Small Cell Lung Cancer (NSCLC); Presidential Symposium at World Conference on Lung Cancer (WCLC), Barcelona, September 2019; abstract published in Journal of Thoracic Oncology (added 12/06/2020)
2. Middleton G; Does tumour genotyping matter: CRUK SMP2 and MATRIX findings; invited oral plenary presentation at Annual Conference of the British Thoracic Oncology Group, Dublin, January 2017.
3. Middleton G; MATRIX/SMP2; invited oral presentation in BTOG/NCRI Advanced Disease Subgroup Update parallel session at Annual Conference of the British Thoracic Oncology Group, Dublin, January 2017.
4. Billingham L, Wherton D, Llewellyn L, Brown S, Johnson S, Fletcher P, Mulatero C, Yap T, Summers Y, Spicer J, Sharpe R, Popat S, Middleton G; National Lung Matrix Trial: successful implementation of a phase II umbrella trial testing multiple genetic-marker-directed drugs in advanced non-small cell lung cancer. Abstract accepted for oral and poster presentation at NCRI Cancer Conference, Liverpool, November 2016.
5. Poster for World Precision Medicine Congress, May 2016: Gary Middleton, Sanjay Popat, Ian Walker, Clive Mulatero, James Spicer, Yvonne Summers, Timothy A. Yap, Laura Llewellyn, Dee Wherton, Lucinda Billingham. National Lung Matrix Trial: Multi-drug, genetic marker-directed, non-comparative, multi-centre, multi-arm phase II trial in non-small cell lung cancer.
6. Brock K, Yap C, Middleton G and Billingham L. Modelling clinical trial recruitment using poisson processes. *Trials*, 16(Suppl 2), p.85 – Published abstract for ICTMC 2015
7. Middleton G, Crack LR, Popat S, Swanton C, Hollingsworth SJ, Buller R, Walker I, Carr TH, Wherton D, Billingham LJ. The National Lung Matrix Trial: translating the biology of stratification in advanced non-small-cell lung cancer. *Ann Oncol.* 2015;26(12):2464-9
8. 1 abstract and 1 poster NCRI 2015
9. 1 abstract for World Conference on Lung Cancer 2015: Billingham L, Brock K, Crack L, Popat S, Middleton G. Using a Bayesian adaptive phase II trial design to test multiple genetic-marker-directed drugs in the National Lung Matrix Trial. *Journal of Thoracic Oncology* 2015; Abstract MINI29.14
10. 1 abstract and presentation for BTOG 2015 - January 2015
11. Brock K, Billingham L, Crack L, Popat S, Middleton G. Forecasting patient recruitment for time-to-event analysis in National Lung Matrix Trial. *Lung Cancer*, 87(Suppl1), p.S69 – January 2015
12. 1 abstract and 1 poster NCRI 2014

Added 12/06/2020:

Publication accepted in a high-impact peer-reviewed journal in June 2020, further details will be provided after embargo period and publication is available online.

## Intention to publish date

01/04/2023

## Individual participant data (IPD) sharing plan

For NLMT data, scientifically sound proposals from appropriately qualified Research Groups will be considered for data sharing. Requests should be made by returning a completed Data Sharing

Request Form and curriculum vitae of the lead applicant and statistician to newbusiness@trials.bham.ac.uk. The Data Sharing Request Form captures information on the specific requirements of the research, the statistical analysis plan, and the intended publication schedule. The request will be reviewed independently by the Cancer Research UK Clinical Trials Unit (CRCTU) Directors at University of Birmingham in discussion with the Chief Investigator and relevant Trial Management Group and independent Trial Steering Committee. In making their decision the Director's Committee will consider the scientific validity of the request, the qualifications of the Research Group, the views of the Chief Investigator, Trial Management Group and Trial Steering Committee, consent arrangements, the practicality of anonymizing the requested data and contractual obligations. Where the CRCTU Directors and appropriate Trial Committees are supportive of the request, and where not already obtained, consent for data transfer will be sought from the Sponsor of the trial before notifying the applicant of the outcome of their request. It is anticipated that applicants will be notified of a decision within 3 months of receipt of the original request.

## IPD sharing plan summary

Available on request

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Protocol article</a>		01/12/2015		Yes	No
<a href="#">Results article</a>		15/07/2020	25/11/2021	Yes	No
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Results article</a>		11/03/2025	13/03/2025	Yes	No
<a href="#">Plain English results</a>			02/07/2025	No	Yes