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# Is it worth performing early HIV detection from burden of illness perspective in the United Kingdom and Poland

Vladimir Zah

► **To cite this version:**

Vladimir Zah. Is it worth performing early HIV detection from burden of illness perspective in the United Kingdom and Poland. Santé publique et épidémiologie. Université de Lyon, 2017. English. NNT : 2017LYSE1124 . tel-01705426

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N°d'ordre NNT :

**THESE de DOCTORAT DE L'UNIVERSITE DE LYON**  
opérée au sein de  
**Université Claude Bernard Lyon 1**

**Ecole Doctorale N° ED 205**  
**Ecole Doctorale Interdisciplinaire Sciences-Santé (EDISS)**

**Spécialité de doctorat:**

**Discipline: Santé publique, recherche clinique, innovation thérapeutique et diagnostique**

Soutenue publiquement/à huis clos le 30/06/2017, par:

**Zah Vladimir**

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**Est-il digne d'intérêt de procéder à une détection précoce du VIH du point de vue de la charge de la maladie au Royaume-Uni et en Pologne**  
**Is it worth performing early HIV detection from burden of illness perspective in the United Kingdom and Poland**

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# Is it worth performing early HIV detection from burden of illness perspective in the United Kingdom and Poland

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Vladimir Zah

Thesis submitted for the degree of Doctor of Philosophy  
Supervised by Professor Mondher Toumi



<sup>1</sup>University of Lyon, Claude Bernard 1, Lyon, France

**Version : 1.0**

**Date : May 13, 2016.**

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## **Acknowledgements**

I would like to thank the following supporters:

My supervisor : Professor Mondher Toumi, for reading multiple revisions of each chapter and providing his highly valued expertise,

Professor Katarzyna Kolasa of Nicolaus Copernicus University Collegium Medicum, Bydgoszcz, Poland for reading several chapters of the draft thesis and providing valuable feedback,

Bristol Myers Squibb UK for support and interfacing with British HIV Association (BHIVA) and HIV Scotland,

HIV Scotland for providing data, feedback and presentation of the results from the decision model titled “Sunrise” within UK Parliament in 2011, stemming from this thesis work,

My sister, Gordana Zah, Professor of English Language for proofreading each section of the thesis.

## **Dissemination :**

This work has been presented as per follows:

Manuscript: Economic and health implications from earlier detection of HIV infection in the United Kingdom, HIV AIDS (Auckl) 2016:8 67-74, Published online 2016 Mar 15.

doi: [10.2147/HIV.S96713](https://doi.org/10.2147/HIV.S96713).

Manuscript: Comparison of economic and health implications from earlier detection of HIV infection in the United Kingdom and Poland, Przegląd Epidemiologiczny-Epidemiological review 2015, 69(4): 765 - 772

## **Abstract:**

**Purpose:** To estimate the potential budget savings and survival impact from achieving an increase in the proportion of HIV cases that are detected early in a given UK or Poland population, thus translating it into a budget for implementing interventions relating to an increase in the uptake of HIV.

**Patients and methods:** A Microsoft Excel decision model (Sunrise) was designed to generate a set of outcomes for a defined population. Survival was modeled on the COHERE study extrapolated to a 5-year horizon as a constant hazard. Hazard rates were specific to age, sex and whether detection was early or late. The primary outcomes for each year up to 5 years were: annual costs, numbers of infected cases, hospital admissions and surviving cases. Secondary outcomes included estimating needed cost of a HIV test and prevalence rate for re-investment of potential cost savings to achieve budget neutrality. Total population was observed in UK and Poland. ISPOR Budget Impact Model - Principles of Good Practice were utilized in Sunrise development.

**Results:** The projected cumulative cost-savings over 5 years in Poland and UK were 5,823,479 PLN (£1,109,234) and £21,608,562 respectively. When including the value of life-years saved projected cumulative cost-savings in Poland and UK amounted to 8,374,018 PLN (£1,595,051) and £29,834,679 respectively. Savings were insensitive to transmission rates, but were sensitive in direct proportion to the percentage shift from late to early detection. In UK, savings were in higher proportion to Poland, due to much higher overall cost of HIV treatment (whether early or late HIV detected patient).

**Conclusion:** Estimated cost savings that could be translated into identification of appropriate programs (providing wider coverage of HIV testing, awareness building) that would lead towards higher proportion of early HIV detected patients are very sensitive to the cost of HIV test, HIV prevalence, incidence and overall HIV treatment cost.

**Keywords:** HIV, testing, costs, savings, model, late detection, early presentation

## **Introduction and Objectives**

### ***Why this topic is important***

Every year millions of people worldwide still die of AIDS. Today's HIV treatments are not a cure. Rather, current therapies can only suppress the virus and slow the progression of HIV disease. While current anti-HIV drugs ("anti-retroviral") have saved millions of people from an early death, no existing HIV treatment eradicates the virus from the body. For every two people who access HIV treatment, another five become infected worldwide. . By mid-2015, 15.8 million people living with HIV were receiving antiretroviral therapy (ART) globally (1). Late diagnosis of HIV remains a serious problem across Europe with 54% of 84,524 patients that diagnose late per results of 35 European countries within Collaboration of Observational HIV Epidemiological Research in Europe (COHERE) study during the time period of 2000-2011(2).

The unmet known outcome of early detection is that researchers predict that a young adult today who begins treatment shortly after diagnosis, who has minimal co-existing health conditions *and* who takes treatment every day exactly as directed should have a near-normal life expectancy. However, it is dependent on HIV testing at a very early stage of HIV disease.

### ***Why it has to be further studied***

Policy makers may not be aware of the actual burden of HIV and potential savings of switching patients from late to early detection and at the same time how much to invest to experience budget neutrality. This study attempts to find these answers.

## ***Objective***

This study established burden of illness perspective of early vs. late HIV detection in the UK and Poland. Thus, the impact of the early vs. late HIV detection was measured in terms of economic, clinical and humanistic burden.

## ***Research Methodology***

Research was conducted using three stages:

- 1) Started with systematic literature review to account for and identify burden of HIV relating to early vs. late HIV detection. A systematic literature review was conducted using MEDLINE, EMBASE and CRD for established methodology, guidelines and clinical trials published 2008-2016 in EU-26, Non-EU central European countries, USA and Canada.
- 2) Decision modeling was utilized for each region of UK and Poland. Burden of Illness decision model was developed using ISPOR principles of good practice for budget impact analysis guidelines.
- 3) “Sunrise” model was integrated in the report by HIV Scotland and presented to UK Parliament House of Lords, Select Committee on HIV and AIDS in the UK (3).

## About the study

### Background

In 2008, it was estimated that 30,000 people in Poland were infected with HIV (human immunodeficiency virus), with approximately 30.5% unaware of their condition. (4) In 2014, as many as 1,085 people were newly infected in Poland. (5) The estimated prevalence of HIV in Poland and UK (United Kingdom) was 0.8 and 1.5 per 1000 population (all age), with a greater proportion of infected males (1.3 and 3.7 per 1000) than females (0.3 and 1.9 per 1000) respectively (6,7). In 2013, it was estimated that 107,800 people in the United Kingdom (UK) were infected with HIV, with unchanged number of approximately 24% unaware of their condition (6).

A late diagnosis of HIV is the most important predictor of morbidity and short-term mortality in HIV infected individuals. A late HIV diagnosis is defined as a CD4 count <350 cells/ $\mu$ l within three months of an HIV diagnosis (5). It has been estimated that the difference in predicted life expectancy between early diagnosis (CD4 count 432 cells/ $\mu$ l) and late diagnosis (CD4 count 140 cells/ $\mu$ l) is 3.5 years (8). Other studies have confirmed that early detection and high CD4 counts can result in life expectancies similar to those of the general population (9,10). A direct benefit of early detection is that infected individuals can immediately start antiretroviral treatment (ART) if they meet the treatment initiation criterion, which in Poland is a CD4 cell count below 500 cells/ $\mu$ l and UK for primary infection was a CD4 cell count below 350 cells/ $\mu$ l and in case of co-infection over 500 cells/ $\mu$ l (11,12). Individuals diagnosed late with HIV are six times more likely to die of AIDS than those diagnosed earlier (13). Not only does early

detection increase life expectancy, it also decreases the annual cost of healthcare (14-16).

There has been an overall trend in the UK towards earlier detection; in 2004 it was estimated that 57% of individuals were diagnosed late within three months of their diagnosis (CD4 cell count < 350 cells/ $\mu$ l), which had improved to only 42% by 2013 (6).

Both Polish and UK national guidelines on HIV testing reflect the need for earlier detection and intervention (12,17). Universal screening is recommended in genitourinary and sexual health clinics, antenatal services, termination of pregnancy services, drug dependency programs and healthcare services for individuals diagnosed with tuberculosis, hepatitis B and C and lymphoma. In addition, the Polskie Towarzystwo Naukowe (PTN) and British HIV Association (BHIVA) guidelines state that where the HIV prevalence in the local population exceeds 2 per 1000 there should be screening for all persons registering in general practice and all general medical admissions, and that the test should be offered to all high risk groups (12,17).

Much of the evidence for the cost-effectiveness of screening comes from modeling studies in the United States (US), where the incremental cost-effectiveness ratio (ICER) for routine HIV testing in an inpatient setting was estimated at \$38,600 per Quality-adjusted Life Year (QALY) gained, whilst testing every five years for high-risk patients in the outpatient setting cost \$50,000-\$57,000 per QALY gained (18,19). When other variables remained constant, estimated ICERs fell (i.e. became more favorable) as the prevalence of HIV infection increased. This provides an economic rationale for expanding universal screening programs to all geographic areas where the prevalence exceeds a given threshold.

The economics of screening become even more favorable when indirect effects are taken into account (18). Early detection of HIV-positive status may reduce the rate of onward viral transmission, reducing the numbers of infected individuals and the consequent cost burden within the population at risk.

This decision model (Sunrise) predicts the impact of detecting more patients with early HIV presentation rather than late, on healthcare system costs and population survival over a 5-year time period. It illustrates these outcomes at the country and regional level for Poland and UK.

## **Poland Healthcare System**

### **General overview**

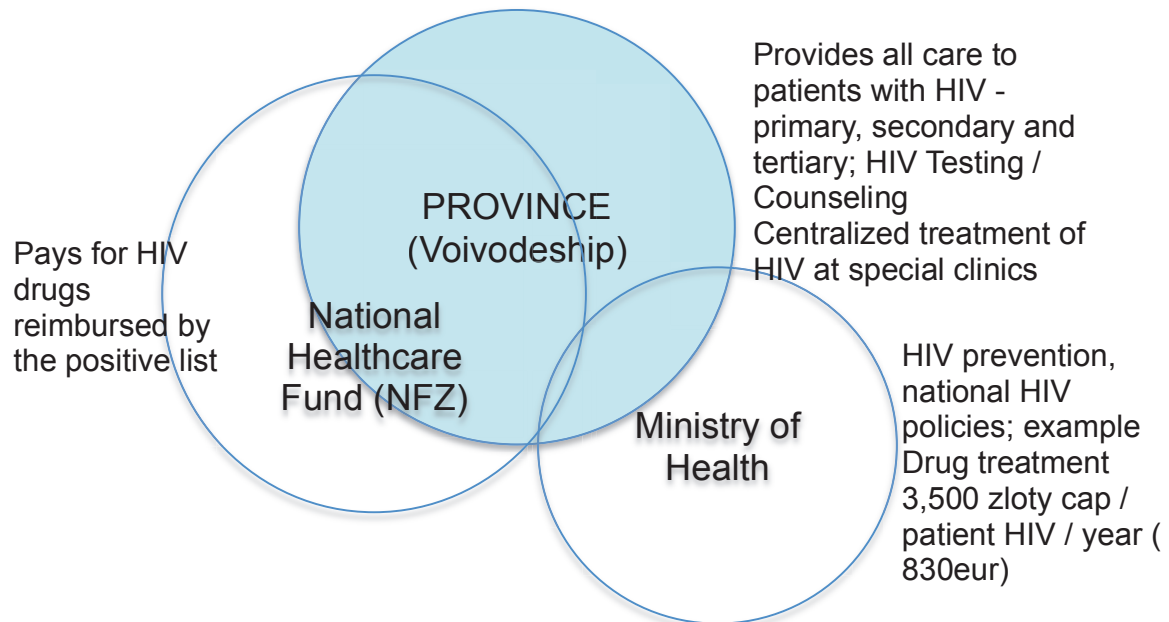
Polish Ministry of Health is responsible for every citizen disease treatment. National Healthcare Fund (NFZ) is contributed to by each working individual, which in return funds the healthcare system. Every Polish citizen has the right to equal access to public healthcare services.

In addition to national healthcare insurance, roughly 65% of the population is privately insured, of which 70% is paid by companies for the employees. Private insurance provides coverage for over and above what national healthcare fund pays, e.g. branded medicines not reimbursed by the NFZ, private setting birth).

Poland has 16 provinces (Voivodeships). Role of each province is to coordinate healthcare services, thus each province has one NFZ branch. Financial allocations among NFZ branches are based on algorithms defined annually by the government and depend on the number, age and gender of the insured regional population. The branches independently contract health services for the insured and divide their budgets between various types of service.

The following diagram depicts the responsibilities of healthcare providers:





### **Polish system modality of operation regarding HIV patient**

There are 29 HIV counseling sites within Poland, predominantly located in cities and bigger towns, e.g. 4 in Warsaw, 2 in Krakow, 2 in Wroclaw and 21 in other towns.

### **Testing based on Private initiative (i.e. individual seeks to have an HIV test)**

Individuals suspecting an HIV infection (for example after unprotected sexual intercourse) can access HIV blood testing only at the specialist HIV clinic. When HIV testing, whether HIV positive or negative results, Individual social identifier is permanently submitted to the provincial database of HIV tested individuals. In addition to, each case of positive HIV has to be directly reported to provincial sanitary inspectorate.

Hence, there is a bit of stigma among population that may want to be tested.

### **Routinely offered HIV testing**

General practitioners are recommended to identify higher risk sexual behavior and/or HIV symptoms, and refer a patient to HIV specialist for testing.

### **Individuals testing HIV positive for the first time**

Individuals who are testing HIV positive for the first time are seen by a specialist (HIV clinician) within 48 hours, and certainly within two weeks of receiving the result, according to the Polish HIV Society 2016 guidelines, enforced by Ministry of Health. Once patients have been detected as HIV positive, starting ART is recommended at any CD4 cell count, including over 500 cells/mm<sup>3</sup>, according to the same guideline. Previous 2014 Polish HIV Society guideline, recommended starting ART at 350 cells/mm<sup>3</sup>.

### **Inpatient stay**

Care for HIV-positive people presenting with complications, can only be provided by an HIV specialist. People living with HIV that require specialized ambulatory care do not require referral from a primary care physician or HIV specialist.

### **HIV Prevention**

On average in 2016, Poland spent 2% of GDP on all prevention programmes. There is no published data to account for specific HIV prevention budget. In addition to nationally financed HIV prevention projects, there were other European (EU) Community sponsored projects, in collaboration with local Non-Governmental Organizations (NGO), between EU countries, which in Poland were estimated at 0.31 zloty (0.06 eur) per capita.

## **UK Healthcare System**

### **General overview**

Similar to Polish setting, National Healthcare Services (NHS) cares for every UK citizen free of charge. Private health insurance provides additional coverage, e.g. more expensive medications not found on NHS reimbursement list, private provider procedure where DRG amount exceeds the cap. Prior to 2012, the HIV prevention and treatment services were overseen by NHS local commissioners. Since the health reforms took place in 2012, the provision of HIV services has a fragmented nature:

Local authorities are responsible for testing and prevention, for social support, and for diagnosing and treating sexually transmitted infections

NHS England is responsible for HIV treatment.

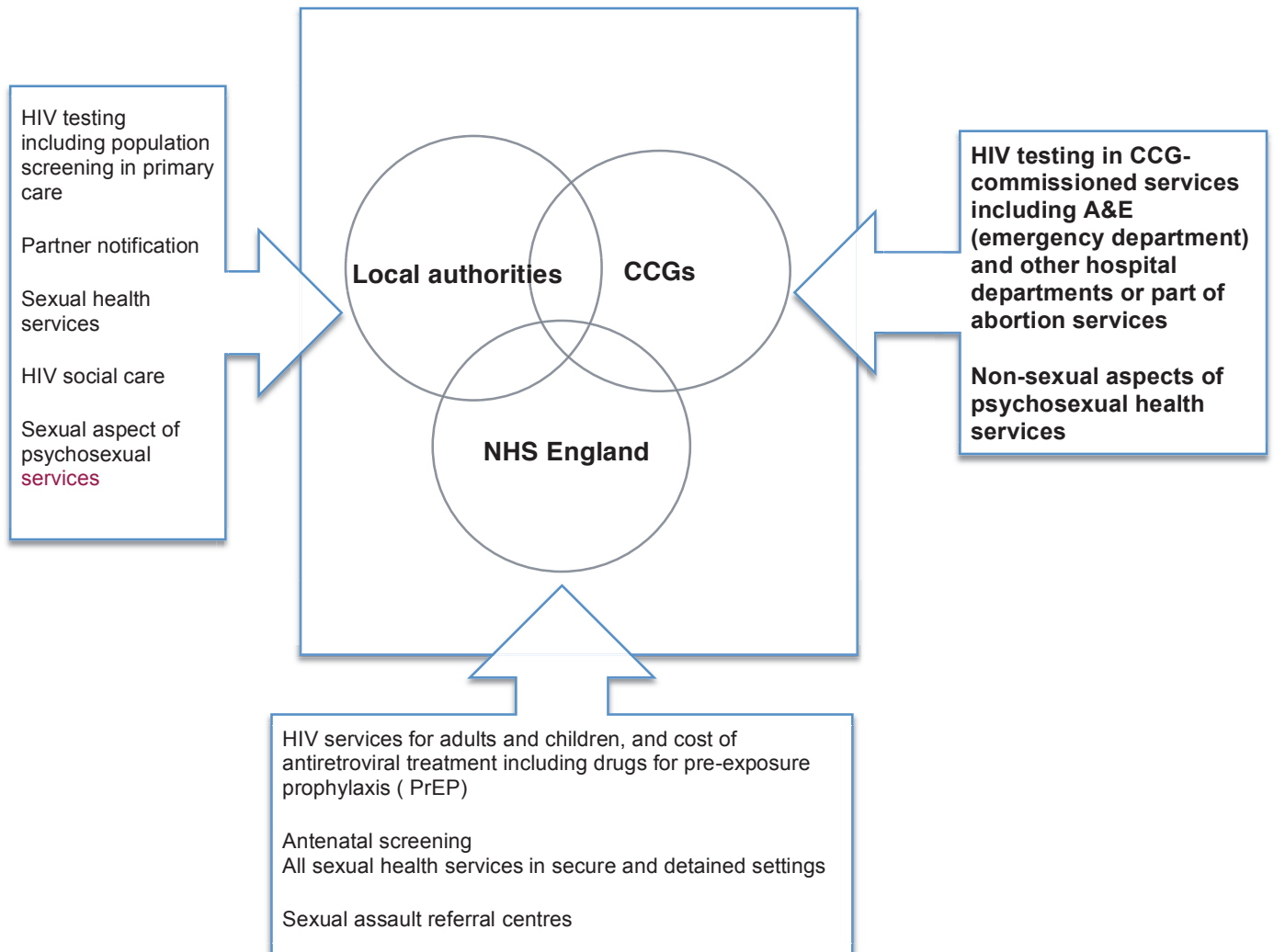
Clinical commissioning groups (CCGs) are responsible for the health of its entire population and are evaluated by the extent to which they improve outcomes. CCG is also responsible for testing and diagnosis within other treatment episodes (for example in maternity care) and for treatment of most co-morbidities (such as hepatitis). CCGs and NHS England share responsibilities for services in primary care.

CCG is led by an elected board of general practitioners, other clinicians, including a nurse and a secondary care consultant, and lay members. CCG is responsible for roughly 2/3 of the total NHS England budget; Or £ 73.6 billion in 2017/18 and accounts for delivery of health care services, such as mental health services, urgent and urgent care, optional hospital services and community care.

They are individually responsible for population health ranging from less than 100,000 to 900,000 population, although the average population covered by a CCG is about a quarter of a million people.

The following diagram depicts where the commissioning responsibilities lie (adapted from Palmer et al, NHS England, Brighton 2015 presentation).

## HIV Commissioning bodies



## UK CCG modality of operation regarding HIV patient

CCGs are GP-led bodies that replaced the Primary Care Trusts (PCTs) the bodies previously responsible for commissioning most services. CCGs are responsible for planning and purchasing the majority of NHS service (secondary care) in their local area. Secondary care is the care usually received in hospital setting.

The role of the CCGs in the treatment pathway for HIV patients relates mainly to three aspects: commissioning testing within a hospital setting, commission hospital admissions and providing counselling for non-sexual aspects. CCGs do not cover the costs for HIV treatments, which fall within the NHS England remit (i.e. antiretroviral treatment ART, including drugs for pre-exposure prophylaxis (PrEP)) – please see the diagram above.

#### **Testing based on Private initiative (i.e. individual seeks to have an HIV test)**

Individuals suspecting an HIV infection (for example after unprotected sexual intercourse) can access HIV blood testing through a number of entry points: sexual health and reproductive health services, GUM (genitourinary medicine) clinics, GP practices, antenatal clinics and also through local HIV voluntary organisations or substance misuse services. Individual social identifier is not submitted to the national database of tested HIV individual.

Another type of testing, “Point of care” test, is based on saliva sampling or a small spot of blood from one’s finger is provided in a clinical setting. The results are available within minutes. However, there is a concern surrounding false positive and negative HIV results, as they impact patient wellbeing.

#### **Routinely offered HIV testing**

Based on the 2008 HIV testing national guidelines set by the National Institute for Health and Care Excellence (NICE), universal HIV testing is recommended in all of the following settings: GUM or sexual health clinics, antenatal services, termination of pregnancy services, drug dependency programmes, healthcare services for those diagnosed with tuberculosis, hepatitis B, hepatitis C and lymphoma. Effectively, in these settings, an HIV testing is routinely offered even if the individual does not initiate the request for one.

Also, an HIV testing is recommended in settings where diagnosed HIV prevalence in the local population exceeds 2 in 1000 population for all men and women registering in general practice and for all general medical admissions. HIV testing is also routinely offered to special groups of population (for example, if someone has been diagnosed with a STD, have partners with HIV and so on).

HIV testing may be recommended by other clinicians where patients *have symptoms of HIV*. The 2008 NICE HIV testing national guidelines include a long list of clinical indicator diseases for adult HIV infection covering respiratory, neurology, dermatology, gastroenterology, oncology and other disease areas, which might have AIDS-defining conditions.

### **Individuals testing HIV positive for the first time**

Individuals who are testing HIV positive for the first time are seen by a specialist (HIV clinician, specialist nurse or sexual health advisor or voluntary sector counsellor) within 48 hours, and certainly within two weeks of receiving the result, according to 2008 NICE HIV testing guidelines. Once patients have been detected as HIV positive, starting ART is recommended at any CD4, including over 500 cells/mm<sup>3</sup>, according to BHIVA (British HIV Association) HIV 2015 guidelines (with interim 2016 update). Previous, 2012 BHIVA HIV guideline

recommended starting ART at 350 cells/mm<sup>3</sup>. If treatment for another infection is needed, but patient is not yet on ART, then ART should also be started within two weeks. For people starting ART, the guidelines recommend using Tenofovir plus emtricitabine (FTC) in a combination drug (Truvada) plus one of the following six options: dolutegravir, elvitegravir boosted with cobicistat, darunavir boosted with ritonavir, raltegravir, rilpivirine, atazanavir boosted with ritonavir. The drugs can be changed based on the side effects, on HIV becoming resistant to one or more drugs and based on the viral loads being not as good as they could be. Guidelines do not recommend stopping ART because of viral load rebounds.

### **Inpatient stay**

The British HIV Association recommends that care for HIV-positive people presenting with complications of HIV infection, should be provided by an HIV specialist-led multidisciplinary team, frequently in collaboration with other medical specialties. If people living with HIV are hospitalised with a suspected or proven AIDS-defining opportunistic infection/cancer and/or with severe immunosuppression, their care is supervised by or discussed with a clinician experienced in the inpatient management of HIV disease. The access to HIV specialist inpatient unit should take place within 24 hours of referral.

### **HIV Prevention**

In 2016, an average spent on HIV prevention programme was £0.44 per capita. This was a significant drop from £0.80 per capita in the previous year. Higher expenditure was in regions with higher HIV prevalence rate of minimum 2 in 1,000 population. Ratio between higher and lower prevalence rate regions varied between 2-4 times.



## **Material and methods**

### **Search keywords and study implication**

Study search keywords selection was an iterative process. There has been a number of studies performed relating to the parts of this study research question, that had similar keyword terms and that this study systematic review had to account for. Namely, term HIV detection varied from study to study; in some studies HIV detection was referred to as a presentation, in others as a diagnosis. UK studies predominantly used term detection. The definition of early detection also varied between studies. In some cases, it was referred to as CD4 $\geq$ 350 cells/ $\mu$ l within three months, in some cases within six months and in some cases as viral load at the time of the first reading (no time frame specificity). CD4 cell count itself as an indicator of early HIV detection migrated from  $\geq$ 200 cells/ $\mu$ l to  $\geq$ 350 cells/ $\mu$ l in 2011 (20), whereas in 2015-16 there is currently an uptake on European consensus recommendation level to  $\geq$ 500 cells/ $\mu$ l level.

At the time of the study, consensus definition of early detection as CD4  $\geq$ 350 cells/ $\mu$ l within three months from diagnosis, that was accepted in UK and Poland (20). Late detection represented CD4 <350 cells/ $\mu$ l within three months from diagnosis.

In order to capture all relevant papers that may have relevancy to the research question, keywords early or late were included in search. Further, keywords testing or mortality or survival or life or expectancy or life expectancy were also added to the search, as different keyword search strategies were performed in order to identify and augment all findings that may be deemed relevant to the research question. Specific countries were listed in the keyword search, as well as the 2008-2016 year range.

As this is a countries level HIV Population study, it included all patients of all ages. Only studies published in English language were considered.

## Search Strategies

A preliminary literature review was conducted using MEDLINE, Cochrane Library, EMBASE and CRD for guidelines, reports and clinical trials published 1995–2008 in UK, England, Scotland, Wales, Northern Ireland, USA, Canada, Australia, Norway and EU-26. This preliminary literature review identified 126 publications related to late detection, from which 6 were deemed relevant, but all 6 were updated in the later years.

Then, a systematic literature review was conducted by searching MEDLINE, EMBASE and CRD electronic databases published in English language to identify relevant publications from 2008 to 2016. The gray literature was searched using Google Scholar and key sources such as the World Health Organization (WHO) website. The literature searches were based on the combined searches of the following terms:

Initial PubMed search provided 4,085 records per query as follows:

HIV AND ("early" OR "late") AND ("testing" OR "mortality" OR "survival" OR "life" OR "expectancy" OR "life expectancy" OR "detection" OR "diagnosis" OR "presentation") AND ("UK" OR "great britain" OR ("great" AND "britain") OR ("united" AND "kingdom") OR "united kingdom" OR "france" OR "germany" OR "denmark" OR "sweden" OR "norway" OR "finland" OR "poland" OR "czech republic" OR "Czech" OR ("czech" AND "republic") OR "slovakia" OR "italy" OR "spain" OR "portugal" OR "slovenia" OR "hungary" OR "roumania" OR "greece" OR "serbia" OR "montenegro" OR "albania" OR "moldavia" OR "lithuania" OR "latvia" OR "estonia" OR "netherlands" OR "Belgium" OR "luxembourg" OR "liechtenstein" OR "switzerland" OR "iceland" OR "macedonia" OR "FYROM" OR "USA" OR "united states" OR "canada") AND ("2008/01/01"[PDAT] : "2016/04/04"[PDAT]),

Embase search provided 3,776 records per query as follows:

'hiv' AND ('early' OR 'late') AND ('testing' OR 'mortality' OR 'survival' OR 'life' OR 'expectancy' OR 'life expectancy' OR 'detection' OR 'diagnosis' OR 'presentation') AND ('uk' OR 'great britain' OR 'great' AND 'britain' OR 'united' AND 'kingdom' OR 'united kingdom' OR 'france' OR 'germany' OR 'denmark' OR 'sweden' OR 'norway' OR 'finland' OR 'poland' OR 'czech republic' OR 'czech' AND 'republic' OR 'slovakia' OR 'italy' OR 'spain' OR 'portugal' OR 'slovenia' OR 'hungary' OR 'roumania' OR 'greece' OR 'serbia' OR 'montenegro' OR 'albania' OR 'moldavia' OR 'lithuania' OR 'latvia' OR 'estonia' OR 'netherlands' OR 'belgium' OR 'luxembourg' OR 'liechtenstein' OR 'iceland' OR 'switzerland' OR 'macedonia' OR 'fyrom' OR 'usa' OR 'united states' OR 'canada') AND (2008:py OR 2009:py OR 2010:py OR 2011:py OR 2012:py OR 2013:py OR 2014:py OR 2015:py OR 2016:py)

3) CRD search provided 8 records per query as follows:

“HIV” and (“presentation” or “detection” or “diagnosis”)

After matching search records and removing duplicates between PubMed and Embase there was total of 4,431 unique papers for review. Doing additional search, 24 more studies were identified. During review process, 4,305 papers were deemed as unrelated to the research question. Thus, 102 full-length papers were reviewed. 70 papers were deemed for exclusion (38 due to review or comment, 30 due to limited scope to specific population and 2 due to methodological considerations), leaving total of 32 papers included in this review(see figure I for details).

## **Current state of the art based only on literature review**

Systematic literature review successfully revealed study design key parameters necessary for preparing a solution to the research question. These parameters are in detail discussed within 'the model framework' section. In addition to, systematic literature review did not identify any study that already attempted to respond directly to the research question.

With medication innovation such as combination antiretroviral therapy (cART), since 1996, there has been a major improvement in life expectancy of HIV patients, delay and avoidance of AIDS onset due to diligent management of patient HIV viral load (1,21, 22). This prompted further research into relationship between mortality and different CD4 viral load levels. (2,9). Elevated risks of early mortality in HIV patients were associated to older age (over 50 years old), female gender, migrant from sub-Saharan Africa and probable HIV exposure categories of injecting drug use (IDU), man having sex with man (MSM) and heterosexual contact (2, 9, 17, 41, 54, 47, 21,23). However, some studies reported only local nationals, where the foreign nationals exclusion provided solid, but not complete results (21).

As older adults are the least likely of all age groups to practice safe sex and with late-life changes in the reproductive tract and immune system enhancing HIV acquisition susceptibility and physician being less likely to offer to them HIV testing, it makes adults >50 years of age carrying the highest risk of contracting HIV (18,24).

The CD4 count (HIV viral load) is the most important laboratory indicator of immune function in HIV-infected patients. It is also the strongest predictor of subsequent disease progression and survival according to findings from clinical trials and cohort studies (25,26). It should be measured in all patients at entry into care. Consensus definition of the viral load itself as an indicator of early HIV detection has a major impact on the research question. Namely, different levels of CD4 (<200 cells/ $\mu$ l, <350 cells/ $\mu$ l or <500 cells/ $\mu$ l) impact both early / late population distribution, population survival rates, as well as different levels of early / late detected HIV

patient healthcare resource use. The author agrees with other researchers that have also identified that as the definition of early presentation or early HIV detection changes with CD4 cell count threshold moving upward, the distribution of patients also shift more towards late presentation patients. This can create further confusion of over-reported raising late presentation in HIV population over a longer time period, which is certainly not the case (27). At the time of the study, cART initiation was recommended in patients when CD4 count drops below 350 cells/ $\mu$ l, however revised guidelines published by BHIVA in September 2015, recommend all patients no matter what CD4 cell count, are to be offered cART (28). Implication of this new guideline is that all patients in the first year would receive cART, whereas it has been previously identified that patients with CD4 cell count  $\geq$ 350 cells/ $\mu$ l would receive cART starting at year two upon diagnosis, whereas other patients would receive it in the first year of diagnosis (15). Because of diversity of cART interventions, the high heterogeneity of the data rendered a meta-analysis inappropriate; thus, a focus was on overall cost of cART treatment per early or late detected patient (15, 29).

Literature review revealed differences in mortality risk and survival rates between HIV patients and general population (2,9,30,31,32,33,34). In particular, mortality risk and survival rates varied among early or late detected patients, whether they are male or female, younger or older than 50 years of age, as well as by HIV-1 viral subtype variations. HIV-1 viral subtype variations could not be considered in this study, as there was no HIV national population sample breakdown by HIV-1 viral subtype (31). HIV-1 B subtype was most prominent (15,419 from total 20,784 patients) of all HIV-1 subtypes with crude mortality rate of 12.3 per 1,000 patient years (31). Life expectancy in HIV infected population has increased from 1996 through 2008, however it is still about 7-13 years less than that of UK population, which is similar to Poland (2, 30,31,35,36), see table 4. This life expectancy variations, has been proven to be directly related to CD4 cell count.

## **Quality assessment**

Quality assessment was guided by Effective Public Health Practice Project (EPHPP) criteria. Author rated each of the quality components in terms of selection bias, study design, confounders, blinding, data collection methods, withdrawals/dropouts and integrity of intervention. Reviewer rated each component as strong, moderate, or weak.

## **The model framework**

Sunrise is a Microsoft Windows-compatible computer program with a user-friendly, graphical interface. It was designed to estimate the potential budget savings and survival impact from achieving an increase in the proportion of HIV cases that are detected early in a given population, thus translating it into a budget for implementing interventions relating to an increase in the uptake of HIV.

Sunrise observes a time period of five years, as this is the most relevant time period that decision makers and policy makers would consider. Although the impact of HIV transmission is greater with an increase in time period observed, five years term was the limiting factor per input from decision makers (HIV Scotland).

Population considered in the model represents newly detected patients from the first year of observation, with inclusion of forecasted newly detected patients in the second through the fifth year.

User input requirements include: population size split by age (< 50 years, ≥ 50 years), sex, the incidence of newly-detected HIV cases per annum and the proportion of early- and late-diagnosed patients receiving ART. Other input parameters are set at default values, though they may be altered by users to allow for sensitivity analyses. These parameters include

epidemiological assumptions to model survival and transmission; and the annual costs of HIV care contingent on disease status.

Sunrise generates a set of outcomes for the defined population under the current and future scenarios. The primary outcomes are annual costs, numbers of newly HIV infected cases, hospital admissions and surviving cases, for each year to a maximum 5-year horizon. From these primary data, differential outcomes between scenarios are calculated: cost savings, infected cases avoided deaths avoided and life years gained.

Optionally, the model also allows users to input additional costs to support a fuller Polish NFZ and UK NHS (National Health Service) payer perspective. This feature may be used to include assumptions about the costs of interventions that are expected to bring about the user-defined shift in late to early diagnosis. These investment costs are deducted from the savings in the overall cost impact calculation. The calculation of cost impact can optionally include a monetary valuation of survival; for example, £20,000 per life-year gained in UK and £7,000 in Poland (37). By monetizing the flows of survival for each scenario, the net present value (NPV) of the intervention can be calculated; where  $NPV > 0$ , the decision rule would be to implement the intervention. The model does not explicitly allow for utility adjustment of survival.

Alternatively, omitting a valuation of survival corresponds to a budget impact analysis. All flows of costs and survival are discounted to present values at 3.5% per annum (38-40).

## **Epidemiological assumptions and data**

In 2013, percentage of 50+ age group of newly-detected patients was 7.7% and 16.3% in Poland and UK respectively.

Survival was modeled based upon the COHERE study (2, 9, 31), UK CHIC study (30), Murray (32), CASCADE collaboration (33), Nakagawa (34) and Smith RD (41), and extrapolated to a

5-year time horizon as a constant hazard utilizing linear regression to numerically assess goodness of a fit and estimate parameters of the Weibull regression, results can be seen in Appendix 1. In particular, mortality risk and survival rates of HIV detected population was divided into 8 categories: >200, 200-350, 350-500, >500 per  $\mu\text{L}$ , further by male or female for each early and late detected group, to derive average hazard rate per annum in each newly-diagnosed HIV early (CD4 cell count  $\geq 350/\mu\text{l}$ ) and late (CD4 cell count  $< 350/\mu\text{l}$ ) detected group, for male (M) or female (F). For estimating survival among the population observed, starting risk of death  $r$  (hazard rate) was calculated for four groups: 1) newly early detected patients, 2) newly late detected patients, 3) of male gender and 4) of female gender, resulting in Poland with 0.45% (M), 0.29% (F) and 2.75% (M), 1.99% (F) and UK with 0.40% (M), 0.25% (F) and 2.52% (M), 1.83% (F) respectively.

Risk of death was specific to sex, early or late detection and gender, defined as at a CD4 cell count of  $> 350/\mu\text{l}$  or  $< 350/\mu\text{l}$  respectively. Formulas for the survival probability are represented below:

Formula 1	$[S^{early}(t)]_{<50} = \rho(1 - r_m^{early})^{(t-1)} + (1 - \rho)(1 - r_f^{early})^{(t-1)}$
Formula 2	$[S^{late}(t)]_{<50} = \rho(1 - r_m^{late})^{(t-1)} + (1 - \rho)(1 - r_f^{late})^{(t-1)}$
Formula 3	$[S^{early}(t)]_{\geq 50} = [S^{early}(t_0)]_{\geq 50} - 1/14 \times ([S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50})$



Formula 4	$[S^{late}(t)]_{\geq 50} = [S^{late}(t_0)]_{\geq 50} - 2.4 \times ([S^{late}(t_0)]_{< 50} - [S^{late}(t)]_{< 50})$
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Survival probability  $(1 - r)$  appears as the complementary risk of death. Survival function  $S(t)$  represents the estimate of survivors at the beginning of the time period  $t$ , and this is a cumulative function calculated as  $S(t) = (1 - r)^{(t-1)}$ .

If we denote the risk of death in men with  $r_m$  and the risk of death in women with  $r_f$  and if  $\rho$  represents percentage of men, then  $(1-\rho)$  represents the percentage of women in the study, so the expected number of survivors is calculated as the sum of the expected number of surviving men and the expected number of surviving women:

$$S(t) = \rho(1 - r_m)^{(t-1)} + (1 - \rho)(1 - r_f)^{(t-1)}$$

Symbols denoting risk of death separated by gender and HIV detection time may be introduced:

$r_m^{late}$  – risk of death in late disease detection in male population

$r_m^{early}$  – risk of death in early disease detection in male population

$r_f^{late}$  – risk of death in late disease detection in female population

$r_f^{early}$  – risk of death in early disease detection in female population

For the group of patients aged 0 – 49, the expected number of surviving men in whom the disease was discovered early is:

$$[S_m^{early}(t)]_{< 50} = \rho(1 - r_m^{early})^{(t-1)} ,$$

With the expected number of surviving women in whom the disease was detected early is:

$$[S_f^{early}(t)]_{<50} = (1 - \rho)(1 - r_f^{early})^{(t-1)}.$$

Then, the expected number of survivors at the beginning of the time period t for those in whom the disease was detected early is calculated as the sum of the expected number of surviving men in whom the disease was detected early and the expected number of surviving women in whom the disease was detected early, i.e.:

$$[S^{early}(t)]_{<50} = [S_m^{early}(t)]_{<50} + [S_f^{early}(t)]_{<50} = \rho(1 - r_m^{early})^{(t-1)} + (1 - \rho)(1 - r_f^{early})^{(t-1)}$$

(Formula 1)

Similarly, the expected number of surviving men in whom the disease was detected early is:

$$[S_m^{late}(t)]_{<50} = \rho(1 - r_m^{late})^{(t-1)} ,$$

And the expected number of surviving women in whom the disease was detected early is:

$$[S_f^{late}(t)]_{<50} = (1 - \rho)(1 - r_f^{late})^{(t-1)},$$

Therefore, the expected number of survivors with late disease detection represents the sum of the expected number of surviving men and women in whom the disease was detected late.

$$[S^{late}(t)]_{<50} = [S_m^{late}(t)]_{<50} + [S_f^{late}(t)]_{<50} = \rho(1 - r_m^{late})^{(t-1)} + (1 - \rho)(1 - r_f^{late})^{(t-1)}$$

(Formula 2)

This explains the first two formulas i.e. calculation of the expected number of survivors for the group of patients aged 0-49, depending on the gender and the detection time.

Thus, the survival function is used to calculate for each year the expected number of the survivors when the disease is detected early, and the expected number of survivors in the late detection of the disease.

With a group of patients older than 50 in whom the disease was detected late, there is a presumption that the possibility of death is 2.4 times higher than in the patients under the age of 50 in whom the disease was detected early.

To understand the used formula, calculation of the expected number of survivors can be displayed in another way.

If the beginning of the research i.e. the initial year is marked with  $t_0$ , the expected number of survivors at the onset  $S(t_0)$  will be 100% as that represents the moment of the very beginning of the study. In each subsequent point of observation i.e. year  $\neq t_0$ , the expected number of survivors decreases and is calculated as:

$$S(t) = S(t_0) - \sum_{i=t_0}^t r(1-r)^{(i-1)} = 100\% - \sum_{i=t_0}^t r(1-r)^{(i-1)}$$

i.e.

$$S(t_0) - S(t) = \sum_{i=t_0}^t r(1-r)^{(i-1)}$$

For example, for  $t=3$ , the formula is:

$$S(3) = S(1) - (r + (1-r)r) = 100\% - r - (1-r)r$$

i.e. from the initial 100% of the expected survivors, the risk of death  $r$  is deducted for the period between the first and the second year, then the product of survival probability until the second year and the risk of death in the period between the second and the third year are deducted.

If we also include the division in gender, the formula becomes:

$$S(t) = S(t_0) - \left( \rho \sum_{i=t_0}^t r_m(1-r_m)^{(i-1)} + (1-\rho) \sum_{i=t_0}^t r_f(1-r_f)^{(i-1)} \right)$$

$$S(t_0) - S(t) = \left( \rho \sum_{i=t_0}^t r_m (1 - r_m)^{(i-1)} + (1 - \rho) \sum_{i=t_0}^t r_f (1 - r_f)^{(i-1)} \right)$$

The formula we use to calculate the expected number of survivors over the age of 50 in whom the disease was detected late is:

$$[S^{late}(t)]_{\geq 50} = [S^{late}(t_0)]_{\geq 50} - 2.4 \times ([S^{late}(t_0)]_{< 50} - [S^{late}(t)]_{< 50})$$

The expected number of survivors over the age of 50 in whom the disease was detected late, in the year t, is calculated when from the originally expected number of survivors over the age of 50 in whom the disease was detected late (100%), we deduct the difference between the value of the expected number of surviving patients under the age of 50 in whom the disease was detected late at the beginning, and the value in the year t multiplied by 2.4, as the risk of death is 2.4 times higher for the patients older than 50 in case of late disease detection than in the patients under the age of 50 in case of late disease detection (41).

$$[S^{late}(t)]_{\geq 50} = [S^{late}(t_0)]_{\geq 50} - ([S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50}) \text{ (we added and deducted } [S^{late}(t_0)]_{\geq 50} \text{)}$$

The difference  $[S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50}$  can be represented as:

$$[S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50} = \left( \sum_{i=t_0}^t (2.4 \times r_m^{late}) (1 - r_m^{late})^{(i-1)} + (1 - \rho) \sum_{i=t_0}^t (2.4 \times r_f^{late}) (1 - r_f^{late})^{(i-1)} \right)$$

We use  $2.4 \times r_m^{late}$ , because the risk of death is 2.4 times higher than in the patients under the age of 50 in whom the disease was detected late. Further:

$$[S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50} = 2.4 \times \left( \sum_{i=t_0}^t r_m^{late} (1 - r_m^{late})^{(i-1)} + (1 - \rho) \sum_{i=t_0}^t r_f^{late} (1 - r_f^{late})^{(i-1)} \right)$$

$$\begin{aligned}
&= 2.4 \times ([S^{late}(t_0)]_{<50} - [S^{late}(t)]_{<50}) \\
[S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50} &= 2.4 \times ([S^{late}(t_0)]_{<50} - [S^{late}(t)]_{<50}) \\
[S^{late}(t)]_{\geq 50} &= [S^{late}(t_0)]_{\geq 50} - 2.4 \times ([S^{late}(t_0)]_{<50} - [S^{late}(t)]_{<50})
\end{aligned}$$

And since the survival function at the onset is  $t_0$  100%, we get:

$$[S^{late}(t)]_{\geq 50} = 100\% - 2.4 \times (100\% - [S^{late}(t)]_{<50})$$

For the patients over the age of 50, in whom the disease was detected early, a risk of death is presumed at 14% of the risk of death in patients over 50 in whom the disease was detected late.

The expected number of survivors over the age of 50 in whom the disease was detected early, in the year  $t$ , is calculated when from the originally expected number of survivors over the age of 50 in whom the disease was detected early (100%), we deduct the difference between the value of the expected number of surviving patients over the age of 50 in whom the disease was detected late at the beginning, and the value in the year  $t$  multiplied by 14%, as 14% is the ratio between the patients over the age of 50 in case of early disease detection and the patients over the age of 50 in case of late disease detection. The formula is derived as follows:

As in the previous case, we start from:

$$\begin{aligned}
[S^{early}(t)]_{\geq 50} &= [S^{early}(t_0)]_{\geq 50} - ([S^{early}(t_0)]_{\geq 50} - [S^{early}(t)]_{\geq 50}) \\
&\quad (\text{we added and subtracted } [S^{early}(t_0)]_{\geq 50})
\end{aligned}$$

The difference  $[S^{early}(t_0)]_{\geq 50} - [S^{early}(t)]_{\geq 50}$  can be represented as:

$$[S^{early}(t_0)]_{\geq 50} - [S^{early}(t)]_{\geq 50} = 14\% \times ([S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50})$$

Further:

$$[S^{early}(t)]_{\geq 50} = [S^{early}(t_0)]_{\geq 50} - 14\% \times ([S^{late}(t_0)]_{\geq 50} - [S^{late}(t)]_{\geq 50})$$

And since the survival function at the onset is  $t_0$  100%, we get:

$$[S^{early}(t)]_{\geq 50} = 100\% - 14\% \times (100\% - [S^{late}(t)]_{\geq 50})$$

This framework allows for modeling of the survival benefits associated with a given shift in the proportion of late and early diagnoses, based on flexible input gender breakdown and starting input death hazard rate. The number of life-years gained over  $t$  years from a percentage point shift in the distribution is derived using the hazard rates associated with late and early HIV detection, respectively. Hence, this two state Markov model with HIV patients being in either alive or death state cycles on an annual basis to further estimate total number of patients that may die on an annual basis up to five years term cumulative. Thus, a shift from late to early detection impacted the distribution of patients, which have different survival probabilities.

The assumptions that 7.7 and 16.3 % of all newly-diagnosed HIV infections occur in individuals aged over 50 years, and that 80% and 64% of these are in males in Poland and UK, respectively, were further considered in order to generate the survival probabilities in Table 1 (Panel A - Poland and Panel B - UK) (4,41,42).

Calculation results were validated against the study of life expectancy data from a cohort of recently diagnosed individuals in the Netherlands (10).

In the UK, the assumed number of onward transmissions avoided per year per positive patient was 0.02773 (43). In case of Poland, due to missing information of onward transmission rate, author used the relationship between prevalence and incidence in the UK and Poland to derive Polish onward transmission rate of 0.02634. As the ratio of UK HIV population was 7.36% between incidence (6000 new cases) and prevalence (81,510 existing HIV patients) and for Poland 6.65% (1085 new cases vs. 16,319 existing patients), further ratio between Poland and UK incidence and prevalence were compared to derive factorial of 0.95 (6.65% / 7.36%), which multiplied by 0.02773 gave assumption of 0.02634 for Poland. This value was the default for the transmission multiplier scalar, which represent rate of infection avoided if patient was early detected. It is utilized to account for new patients that were infected in a previous year. As this was the only published rate and was coming from National Institute for Health and Clinical Excellence (NICE), author performed sensitivity analysis to determine the impact of this transmission multiplier scalar. Sensitivity analysis pointed that due to the limitation of observing maximum five years term, transmission multiplier scalar had very modest impact on results.

### **Cost impact calculations**

The annual cost is the sum of all categories of HIV clinical care from a payer perspective and includes inpatient, outpatient and day patient care, test procedures, costs of ART (based upon current NFZ Poland and BHIVA guidelines) (11,44) and other drugs. Costs for these resource categories were taken from data collected by NFZ Poland, MoH Poland and the National Prospective Monitoring System from 1996-2006 (13,14,43,44). In Poland, the average annual NFZ cost of HIV patient included: ART treatment reimbursement cap per capita 3,500 PLN (£666), hospitalization 13,802 PLN (£2,629), outpatient (ambulatory) care reimbursement cap per capita 3,178 PLN (£605), other drug cost ranging 948-1,918 PLN (£180-365), tests and procedures 63-95 PLN (£12-18) (Table 2A) (37,41,42). Therefore, the higher treatment costs reported with late stage detection are not the result of factors correlating with the timing of the

HIV diagnosis, but rather reflect the independent effect of an early vs. late diagnosis after controlling for other confounding factors. ISPOR Budget Impact Model - Principles of Good Practice were followed during Sunrise decision model development (45).

## **Settings and assumptions for analyses**

There were 1098 HIV, 102 newly-detected AIDS cases and 61 deaths registered in 2013 in Poland. This equates to an estimated new HIV diagnosis rate of 0.29 per 10,000 population (46).

There were 6,000 HIV, 320 newly-detected AIDS cases and 530 deaths registered in 2013 in the UK. This equates to an estimated new HIV diagnosis rate of 1.0 per 10,000 population (6).

## **Results**

Systematic literature review identified total of 102 full-length articles, which fulfilled the criteria based on full review. In the process of full review 70 studies were excluded. Among these 38 represented reviews or commentaries. 30 studies were excluded due to population specificity that had a limited scope of the analysis relating to the specific groups of patients and not directly related to the hypothesis population. 2 studies were excluded due to methodological considerations. Thus, 32 studies were included and incorporated in the design of the Sunrise model.

Figures IIA and IIB illustrate graphically the cumulative financial impact of achieving 30% relative shift to early diagnosis and its breakdown for UK and Poland, respectively. In each figure, the total cumulative savings are presented.



Figure III represents the impact in terms of number of avoided HIV individuals due to a 30% relative shift from late to early detection.

### **1) UK**

In the UK, 30% relative shift in HIV detection from 42% to 29.4% late detected HIV patients, over 5 years, would result in estimated direct NHS £21,608,562 savings, £28,811 savings per infected person, 411 life years gained and 212 HIV infections avoided. If a broader societal perspective is used, monetizing life years saved, total savings would be £29,834,679. Sunrise results are similar to the existing research that estimated cost per additional life-year saved in the range of £2,960 to £4,639 depending on CD4 cells/mm<sup>3</sup> at the point of presentation (47, 48).

30% relative HIV detection shift to early-detection in the UK also resulted in instant 785 per year or 3923 early-detected patients over the five-year span. If the NHS projected cost savings of £21,608,562 are deployed to capture this 3923 early-detected patients, it would mean that it would require a detection of at least 9,350 new HIV infected individuals, based on the premise that late detected patients represent 42% of all newly-detected individuals; assuming a detection rate of 2 per 1,000, after 4,672,500 completed tests, with the required maximum cost per test of £4.62, cost savings would be neutral. If we assume a detection rate of 3 per 1,000, the cost per test could rise to a maximum of £6.93 for cost savings to remain neutral. With the value of life years saved, cost of the test could rise to a maximum of £6.20 and £9.29, respectively.

### **Utilizing budget impact savings to cover cost of testing**

Figure IV (Panel A,B andC) graphically illustrate the cumulative financial impact of achieving shifts to early diagnosis for LSL, GMC, and K and M, respectively. In each figure, the left-hand

panel shows the total savings under the base-case future scenario (30% shift from late to early diagnosis, 2.773% transmission rate) and the alternative future scenarios. Also shown are indicative costs based on estimates made by the UK Health Protection Agency (HPA) from pilot National Health Service projects to expand HIV testing (49). The right-hand panels show the breakdown of cost categories that comprise the base-case savings as segments of stacked bars. The top bar segment in white represents the valuation of life-years saved at £20,000 each, so such valuation can be included or excluded by viewing the full bar or only the coloured segments, respectively.

#### UK - LSL

In LSL (population 838,005), an estimated 53 transmitted infections were avoided and 104 life-years saved at year 5. These and the cases detected earlier gave rise to projected savings rising from £887,975 in year 1 to a cumulative value of £5,290,206 at year 5. By year 5, the greatest component of the savings was the value of the projected 104 life-years saved. If this was excluded, year 5 cumulative savings were £3,210,206, and the largest components of savings were due to reduced use of “other drugs”, ie. drugs for prophylaxis and treatment of HIV complications, followed by savings in inpatient care from avoided hospital admissions. The pattern of use of antiretrovirals showed a decrease in expenditure in year 1, which was eroded over time until by year 5 a small cumulative increase resulted (as more patients remained alive and were therefore exposed to treatment in the future scenario). The savings were insensitive to the transmission rate within the 5-year analytic horizon, but were sensitive in direct proportion to the percentage shift from late to early diagnosis, such that savings would be doubled if a complete (100%) shift to early diagnosis was achieved.

When the potential savings are viewed alongside the possible costs of implementing a program of testing all acute hospital admissions and new GP registrations, it can be seen that

cumulative savings from the base-case exceed cumulative costs from year 1 through year 5, and do so without invoking any valuation of life-years saved (see figure IV Panel A).

#### UK - GMC

*The components of savings for GMC and the impact of sensitivity analyses show similar proportions as for LSL, but the absolute magnitude of savings is much smaller, at £2,564,802 for the base-case at year 5. This is a consequence of the overall prevalence in GMC standing at 2.1 per 1,000, as compared to 10.97 per 1,000 in LSL, even though the population of GMC is three times that of LSL. An estimated 26 transmitted infections were avoided and 50 life-years saved at year 5. The cost impact of implementing testing of all acute admissions and new GP registrants is assumed to be in direct proportion to population for the purposes of this analysis, and as a result, exceeds the projected savings from a 50% shift to early detection, using HPA's cost assumptions (see figure IV Panel B).*

#### UK - K and M

K and M has a smaller population than GMC and a lower HIV prevalence, at 0.90 per 1,000. As a result, the potential savings from the base-case are commensurately smaller, at £733,202 to year 5 cumulatively. Seven transmitted infections were avoided and 14 life-years saved at year 5. The savings figures are greatly exceeded by the testing costs under all sensitivity analyses, illustrating that the economic case for expanding testing is less secure in low prevalence localities, where the cost per positive case detected will be relatively high (see figure IV Panel C).

## ***2) UK Regional results***

### **2.1) UK - Wales – All Local Health Boards (LHB)**

#### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £188,133, £20,334, £31,250, £6,365, £272,161 and £45,197. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table VII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

#### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £563,440. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table VII).

#### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 31, 28 and 5 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 351, 190 and 72 days avoided respectfully (Figure VIII).

**Number of HIV+ Infections Avoided**

Based on the initial 162 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 20 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 2, 3 and 6 respectively (Figure IX).

**Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 2, 5 and 11 life years respectfully.

## **2.2) Northern Ireland – All Local Health Boards (LHB) in Northern Ireland**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectively £91,748, £9,917, £15,240, £3,104, £132,727 and £22,042. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table VIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £274,778. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table VIII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 15, 13 and 2 days avoided respectively. Observing cumulative resource savings after five years, results are projected to be 171, 93 and 35 days avoided respectively (Figure XII).

### **Number of HIV+ Infections Avoided**

Based on the initial 79 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 10 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 1, 2 and 3 respectively (Figure XIII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 3 and 5 life years respectively.

## **2.3) Scotland – All Local Health Boards (LHB) in Scotland**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectively £314,680, £34,012, £52,269, £10,646, £455,229 and £75,599. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table IX). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £942,435. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table IX).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 52, 46 and 8 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 588, 318 and 121 days avoided respectfully (Figure XVI).

### **Number of HIV+ Infections Avoided**

Based on the initial 272 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 34 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 9 respectively (Figure XVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 9 and 18 life years respectfully.



## **2.4) England – All CCGs**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £7,082,063, £765,458, £1,176,355, £239,597, £10,245,215 and £1,701,403. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table X). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £21,210,092. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table X).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1166, 1042 and 179 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 13222, 7150 and 2728 days avoided respectfully (Figure XX).

### **Number of HIV+ Infections Avoided**

Based on the initial 6111 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 770 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 21, 62, 124 and 208 respectively (Figure XXI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 20, 81, 202 and 404 life years respectfully.

### **2.4.1) England – DERBYSHIRE AND NOTTINGHAMSHIRE AREA TEAM**

#### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,058, £36,863, £56,651, £11,539, £493,390 and £81,936. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

#### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,021,437. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XI).

#### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 637, 344 and 131 days avoided respectfully (Figure XXIV).

#### **Number of HIV+ Infections Avoided**

Based on the initial 294 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XXV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

## **2.4.2) England – Leicestershire And Lincolnshire Area Team**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,664, £37,037, £56,918, £11,593, £495,713 and £82,322. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,026,264. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 640, 346 and 132 days avoided respectfully (Figure XXVIII).

### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XXIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

### **2.4.3) England - East Anglia Area Team**

#### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £340,782, £36,833, £56,605, £11,529, £492,990 and £81,870. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

#### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,020,609. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XIII).

#### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource

savings after five years, results are projected to be 636, 344 and 131 days avoided respectfully (Figure XXXII).

#### **Number of HIV+ Infections Avoided**

Based on the initial 294 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XXXIII).

#### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.



#### **2.4.4) England – Hertfordshire And The South Midlands Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £339,988, £36,747, £56,473, £11,502, £491,841 and £81,679. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XIV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,018,231. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XIV).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 635, 343 and 131 days avoided respectfully (Figure XXXVI).

##### **Number of HIV+ Infections Avoided**

Based on the initial 293 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XXXVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

#### **2.4.5) England – Essex Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,387, £37,007, £56.872, £11,583, £495,312 and £82,255. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,025,416. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XV).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 639, 346 and 132 days avoided respectfully (Figure XL).

##### **Number of HIV+ Infections Avoided**

Based on the initial 295 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XLI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.6) England –London North East And Central**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £343,264, £37,101, £57,017, £11,613, £496,580 and £82,466. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XVI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,028,041. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XVI).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 57, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 641, 347 and 132 days avoided respectfully (Figure XLIV).

##### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XLV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.7) England – London South**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,247, £36,883, £56,682, £11,545, £493,663 and £81,982. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XVII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,022,003. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XVII).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 637, 345 and 131 days avoided respectfully (Figure XLVIII).

##### **Number of HIV+ Infections Avoided**

Based on the initial 294 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XLIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.



#### **2.4.8) England – London North West**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,686, £37,039, £56,921, £11,594, £495,744 and £82,327. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XVIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,026,311. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XVIII).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 640, 346 and 132 days avoided respectfully (Figure LII).

##### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LIII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.9) England – Devon, Cornwall And Isles Of Scilly Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £340,642, £36,818, £56,582, £11,524, £492,778 and £81,836. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XIX). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,020,190. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XIX).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 636, 344 and 131 days avoided respectfully (Figure LVI).

##### **Number of HIV+ Infections Avoided**

Based on the initial 294 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LVI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

#### **2.4.10) England – Cumbria, Northumberland, Tyne And Wear Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,499, £37,019, £56,890, £11,587, £495,473 and £82,282. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XX). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,025,750. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XX).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 639, 346 and 132 days avoided respectfully (Figure LX).

##### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.11) England – Lancashire Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,934, £36,958, £56,796, £11,568, £494,656 and £82,147. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,024,058. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXI).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 638, 345 and 132 days avoided respectfully (Figure LXIV).

##### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.



#### **2.4.12) England – Greater Manchester Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,580, £37,027, £56,904, £11,590, £495,591 and £82,302. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,025,993. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXII).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 640, 346 and 132 days avoided respectfully (Figure LXVIII).

##### **Number of HIV+ Infections Avoided**

Based on the initial 295 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

#### **2.4.13) England – Cheshire, Warrington And Wirral Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,997, £36,964, £56,807, £11,570, £494,748 and £82,162. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,024,248. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXIII).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 639, 345 and 132 days avoided respectfully (Figure LXXII).

##### **Number of HIV+ Infections Avoided**

Based on the initial 295 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXXIII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.14) England – Merseyside Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,222, £36,881, £56,678, £11,544, £493,626 and £81,976. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXIV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,021,926. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXIV).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 637, 345 and 131 days avoided respectfully (Figure LXXVI).

##### **Number of HIV+ Infections Avoided**

Based on the initial 294 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXXVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

#### **2.4.15) England – Kent And Medway Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £339,486, £36,693, £56,390, £11,485, £491,115 and £81,558. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,016,727. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXV).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 634, 343 and 131 days avoided respectfully (Figure LXXX).

##### **Number of HIV+ Infections Avoided**

Based on the initial 293 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXXXI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.



#### **2.4.16) England – Bath, Gloucestershire, Swindon And Wiltshire Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,763, £37,047, £56,934, £11,596, £495,856 and £82,346. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXVI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,026,542. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXVI).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 640, 346 and 132 days avoided respectfully (Figure LXXXIV).

##### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXXXV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.17) England – Bristol, North Somerset, Somerset And South Gloucestershire Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,254, £36,884, £56,683, £11,545, £493,672 and £81,983. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXVII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,022,021. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XVII).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 637, 345 and 131 days avoided respectfully (Figure LXXXVIII).

##### **Number of HIV+ Infections Avoided**

Based on the initial 294 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure LXXXIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

#### **2.4.18) England – Birmingham And The Black Country Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £341,580, £36,919, £56,738, £11,556, £494,144 and £82,061. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXVIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,022,998. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXVIII).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 638, 345 and 132 days avoided respectfully (Figure XCII).

##### **Number of HIV+ Infections Avoided**

Based on the initial 295 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure CIII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 19 life years respectfully.

#### **2.4.19) England – Hartlepool PCT (Arden, Herefordshire And Worcestershire Area Team)**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,654, £37,035, £56,916, £11,592, £495,698 and £82,320. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXIX). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,026,215. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXI).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 640, 346 and 132 days avoided respectfully (Figure XCVI).

##### **Number of HIV+ Infections Avoided**

Based on the initial 296 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure XCVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.



#### **2.4.20) England – Shropshire And Staffordshire Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £342,434, £37,012, £56,879, £11,585, £495,380 and £82,267. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXX). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,025,556. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXX).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 56, 50 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 639, 346 and 132 days avoided respectfully (Figure C).

##### **Number of HIV+ Infections Avoided**

Based on the initial 295 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure CI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

#### **2.4.21) England – North Yorkshire And Humber Area Team**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £343,862, £37,166, £57,117, £11,633, £497,446 and £82,610. It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £1,029,834. This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXI).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 57, 51 and 9 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 642, 347 and 132 days avoided respectfully (Figure CIV).

##### **Number of HIV+ Infections Avoided**

Based on the initial 297 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30%/70% respectively, or 37 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure CV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 4, 10 and 20 life years respectfully.

### ***3) Poland***

With 30% relative shift in HIV detection from 46% to 32.2% late detected HIV patients, over 5 years, would result in estimated direct NFZ £1,438,050 (7,549,768 PLN), £1,326 (6,960 PLN) savings per infected individual, 61 life years gained and 36 HIV infections avoided. If a broader societal perspective is used, monetizing life years saved, total savings would be £1,923,867 (10,100,303 PLN).

If the NFZ projected cost savings are deployed to capture this 750 early-detected patients, it would require a detection of at least 1,630 all new HIV infected individuals, based on the premise that late-detected patients represent 46% of all newly-detected individuals; assuming a detection rate of 2 per 1,000, after 815,000 completed tests, with the required maximum cost per test of £1.76 (9.26 PLN), cost savings would be neutral. If we assume a detection rate of 3 per 1,000, the cost per test could rise to a maximum of £2.64 (13.89 PLN) for cost savings to remain neutral. With the value of life years saved, cost of the test could rise to a maximum of £2.36 (12.39 PLN) and £3.54 (18.59 PLN), respectively.

The cost per test in three different Polish settings ranged £5.71-6.28 (30-33 PLN). These costs must be considered indicative only and it is conceivable that, once implemented, they could be reduced by economies of scale, scope and learning effects. Evidence is lacking on the quantitative relationship linking the number of tests likely to be performed following a policy decision and the resulting shift to early detection. In Poland, 1,574,320 screening tests were performed nationally in 2013 with 0.6 HIV positive cases per 1,000, whereas excluding blood donors resulted in 2.7 per 1,000 (5).

## ***4) Poland Regional results***

### **4.1) Poland - Dolnoslaskie**

#### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £78,854 (413,984 zl), £3,390 (17,798 zl), £0, £47,451(249,118 zl), £50,504 (265,146 zl) and £998 (5239,5 zl). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

#### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £181,198 (951,288 zl). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXII).

#### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 3, 3 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 33, 6 and 0 days avoided respectfully (Figure CVIII).

#### **Number of HIV+ Infections Avoided**

Based on the initial 137 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 19 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 3, 6 and 10 respectively (Figure CIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 2, 4 and 9 life years respectfully.

## **4.2) Poland - Kujawsko-pomorskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £21,924 (115,101 zł), £943 (4,951 zł), £0, £13,193 (69,263 zł) £14,042 (73,721 zł) and £278 (1,460 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £50,378 (264,486 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXIII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 9, 2 and 0 days avoided respectfully (Figure CXII).

### **Number of HIV+ Infections Avoided**

Based on the initial 38 newly detected patients in the first year divided 42%/58% between late



and early detection with 30-percent relative shift to 30%/70% respectively, or 5 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 1 and 1 respectively (Figure CXIII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 1 and 2 life years respectively.

### **4.3) Poland - Lubelskie**

#### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £25,385 (133,271 zł), £1,091 (5,728 zł), £0, £15,276 (80,199 zł), £16,259 (85,360 zł) and £321 (1,685 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXIV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

#### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £58,333 (306,247 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXIV).

#### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 11, 2 and 0 days avoided respectfully (Figure CXVI).

#### **Number of HIV+ Infections Avoided**

Based on the initial 44 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 6 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 1 and 1 respectively (Figure CXVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 1 and 3 life years respectfully.

## **4.4) Poland - Lubuskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £13,847 (72,697 zł), £595 3,124 zł), £0, £8,332 (43,743 zł), £8,868 (46,557 zł) and £175 (919 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £31,818 (167,044 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXV).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 0 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 6, 1 and 0 days avoided respectfully (Figure CXX).

### **Number of HIV+ Infections Avoided**

Based on the initial 24 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30/%70% respectively, or 3 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 0 and 1 respectively (Figure CXXI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 1 and 2 life years respectfully.

## **4.5) Poland - Lodzkie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £22,501(118,130 zł), £967(5,077 zł), £0, £13,540 (71,085 zł), £14,411 (75,658 zł) and £285 (1,496 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXVI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £51,704 (271,447 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXVI).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 9, 2 and 0 days avoided respectfully (Figure CXXIV).

### **Number of HIV+ Infections Avoided**

Based on the initial 39 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 5 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 1 and 1 respectively (Figure CXXV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 1 and 3 life years respectfully.

## **4.6) Poland - Malopolskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £33,463 (175,681 zl), £1,439 (7,555 zl), £0, £20,136 (105,704 zl), £21,432 (112,518 zl) and £424 (2,226 zl). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXVII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £76,893 (403,690 zl). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXVII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 14, 2 and 0 days avoided respectfully (Figure CXXVIII).

### **Number of HIV+ Infections Avoided**



Based on the initial 58 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 8 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 1, 1 and 2 respectively (Figure CXXIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 2 and 4 life years respectfully.

## **4.7) Poland - Mazowieckie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £131,543 (690,601 zł), £5,656 (29,694 zł), £0, £79,157 (415,574 zł), £84,250 (442,313 zł) and £1,665 (8,741 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXVIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £302,270 (1,586,918 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXVIII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 5, 5 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 55, 10 and 0 days avoided respectfully (Figure CXXXII).

**Number of HIV+ Infections Avoided**

Based on the initial 58 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 31 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 1, 2, 4 and 7 respectively (Figure CXXXIII).

**Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 1, 3, 7 and 15 life years respectfully.

## **4.8) Poland - Opolskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £12,693 (66,638 zł), £546 (2,867 zł), £0, £7,638 (40,100 zł), £8,129 (42,677 zł) and £161 (845 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XXXIX). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £29,166 (153,124 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XXXIX).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 0, 0 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 5, 1 and 0 days avoided respectfully (Figure CXXXVI).

### **Number of HIV+ Infections Avoided**

Based on the initial 22 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 3 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 0 and 1 respectively (Figure CXXXVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 1 and 1 life years respectfully.

## **4.9) Poland - Podkarpackie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £17,885 (83,896 zł), £769 (4,037 zł), £0, £10,763 (56,506 zł), £11,455 (60,139 zł) and £226 (1,187 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XL). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £41,098 (215,765 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XL).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 8, 1 and 0 days avoided respectfully (Figure CXL).

### **Number of HIV+ Infections Avoided**

Based on the initial 31 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 4 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 1 and 1 respectively (Figure CXL1).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 1 and 2 life years respectfully.

## **4.10) Poland - Podlaskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £9,808 (51,492 zł), £422 (2,216zł), £0, £5,902 (30,986 zł), £6,282 (32,981 zł) and £124 (651 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £22,538 (118,323 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLI).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 0, 0 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 4, 1 and 0 days avoided respectfully (Figure CXLIV).

### **Number of HIV+ Infections Avoided**



Based on the initial 17 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 2 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 0 and 1 respectively (Figure CXLV).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 1 and 1 life years respectfully.

## **4.11) Poland - Pomorskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £25,385 (133,271 zl), £1,091 (5,728 zl), £0, £15,276 (80,199 zl), £16,259 (85,360 zl) and £321 (1,685 zl). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £58,333 (306,247 zl). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 11, 2 and 0 days avoided respectfully (Figure CXLVIII).

### **Number of HIV+ Infections Avoided**

Based on the initial 44 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 6 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 1 and 1 respectively (Figure CXLIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 1 and 3 life years respectfully.

## **4.12) Poland, Slaskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £70,964 (372,561 zl), £3,051 (16,018 zl), £0, £42,703 (224,191 zl), £45,451 (238,618 zl) and £898 (4,715 zl). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLIII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £163,067 (856,101 zl). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLIII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 3, 3 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 30, 5 and 0 days avoided respectfully (Figure CLII).

### **Number of HIV+ Infections Avoided**

Based on the initial 123 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 17 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 1, 2 and 4 respectively (Figure CLIII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 2, 4 and 8 life years respectfully.

## **4.13) Poland - Swietokrzyskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £8,654 (45,434 zl), £372 (1,953 zl), £0, £5,208 (27,342 zl), £5,543 (29,101 zl) and £110 (578 zl). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLIV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £19,886 (104,403 zl). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLIV).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 0, 0 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 4, 1 and 0 days avoided respectfully (Figure CLVI).

### **Number of HIV+ Infections Avoided**

Based on the initial 15 newly detected patients in the first year divided 42%/58% between late

and early detection with 30-percent relative shift to 30/%70% respectively, or 2 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 0 and 0 respectively (Figure CLVII).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 0 and 1 life years respectfully.

#### **4.14) Poland - Warminsko-mazurskie**

##### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £13,847 (72,697 zł), £595 (3124 zł), £0, £8,332 (43,743 zł), £8,868 (46,557 zł) and £175 (919 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLV). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

##### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £31,818 (167,044 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLV).

##### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 0 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 6, 1 and 0 days avoided respectfully (Figure CLX).

##### **Number of HIV+ Infections Avoided**

Based on the initial 24 newly detected patients in the first year divided 42%/58% between late



and early detection with 30-percent relative shift to 30/%70% respectively, or 3 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 0 and 1 respectively (Figure CLXI).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 0, 0 and 1 life years respectfully.

## **4.15) Poland - Wielkoposkie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £62,310 (327,128 zł), £2,679 (14,065 zł), £0, £37,495 (196,849 zł), £39,908 (209,517 zł) and £789 (4,142 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLVI). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £143,181 (751,698 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLVI).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 2, 2 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 26, 5 and 0 days avoided respectfully (Figure CLXIV).

**Number of HIV+ Infections Avoided**

Based on the initial 108 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 15 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 1, 2 and 4 respectively (Figure CLXV).

**Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 3 and 7 life years respectfully.

## **4.16) Poland - Zachodniopomorskie**

### **Cumulative cost savings breakdown**

Cumulative cost savings breakdown observed six different categories: Inpatient care, Outpatient care, Dayward setting, annual cART cost, Other Drug cost (non-HIV), Tests & Procedures with the following (costs) / savings at year 5 respectfully £24,743 (129,901 zł), £1,064 (5,586 zł), £0, £14,889 (78,167), £15,847 (83,197 zł) and £313 (1,643 zł). It is of interest to note that there was an increase in cost in only one category – Annual cART costs and substantial savings in the rest of the categories (Table XLVII). Highest amount of cost savings appeared in other drug (non-HIV) category and Inpatient care setting.

### **Total cost savings**

Over the 5-year term, total economic value based on 30-percent relative shift to early detection is estimated to £56,856 (298,492 zł). This is indicative of how much money could be potentially spent to turn such policy into reality shift and still remain budget neutral (Table XLVII).

### **Resource savings in terms of number of days that could be avoided**

Based on 30-percent relative shift from Late to Early Detection, there would be considerable number of days avoided in all three settings: Inpatient, Outpatient Care and Day Ward; in the first year it will be 1, 1 and 0 days avoided respectfully. Observing cumulative resource savings after five years, results are projected to be 10, 2 and 0 days avoided respectfully (Figure CLXVIII).

### **Number of HIV+ Infections Avoided**

Based on the initial 43 newly detected patients in the first year divided 42%/58% between late and early detection with 30-percent relative shift to 30%/70% respectively, or 6 patients annually shift from late to early detection and accounting for HIV incidence rate and transmission multiplier scalar, for year 1, 2, 3, 4, 5, number of HIV+ infections avoided will be 0, 0, 0, 1 and 1 respectively (Figure CLXIX).

### **Cumulative Life Years Saved**

Cumulative life years saved due to 30-percent relative shift from Late to Early Detection for year 1, 2, 3, 4, 5 will be 0, 0, 1, 3 and 7 life years respectfully.

In both, Polish and UK setting, the direct savings were less sensitive to the transmission rate within the 5-year analytic horizon, but were very sensitive in direct proportion to the percentage shift from late to early diagnosis, such that savings would be more than tripled (332%), if a complete (99.99%) shift to early diagnosis were achieved.

## **Discussion**

Savings that could be achieved from earlier detection of HIV infection in different countries were estimated. The estimates critically depend on whether the assumed shifts in late to early detection actually occur. For the purposes of the analyses, author has assumed a 30% relative shift, reducing the national proportion of late diagnoses from approximately 42% to 29.4% in UK and 46% to 32.2% in Poland. This figure was chosen because 30% success might be viewed as the minimum plausible outcome for expanded testing program to be considered. As

the scenarios show, the main driver of cost savings is the shift actually achieved from late to early diagnosis: a 100% shift whereby virtually all cases were diagnosed early would more than triple the savings.

30% relative HIV detection shift to early-detection in Poland (from 54% to 67.8% early detected patients) resulted in instant 150 per year or 750 early-detected patients over the five-year span. If the NFZ projected cost savings of £1,438,050 (7,549,764 PLN) are deployed to capture this 750 early-detected patients, this would require a detection of at least 1,630 all new HIV infected individuals, based on the premise that late-detected patients represent 46% of all newly-detected individuals; assuming a detection rate of 2 per 1,000, after 815,000 completed tests, with the required maximum cost per test of £1.76 (9.26 PLN), cost savings would be neutral. If we assume a detection rate of 3 per 1,000, the cost per test could rise to a maximum of £2.64 (13.89 PLN) for cost savings to remain neutral. With the value of life years saved, cost of the test could rise to a maximum of £2.36 (12.39 PLN) and £3.54 (18.59 PLN), respectively. The cost per test in three different Polish settings ranged £5.71-6.28 (30-33 PLN), thus additional investment would be needed for potential improvement in early HIV detection rate (50-52). However, in Poland with a current fixed annual reimbursement policy per capita for ambulatory care and HIV antiretroviral therapy, there are considerable patient out of pocket expenses which were not captured in this study, as only direct cost impact to NFZNFZ was considered. Furthermore, this study did not consider additional general physician visit's costs and educational marketing campaigns that would be needed to raise awareness among the riskier population to successfully conduct wider testing strategies in townships with higher HIV prevalence. In addition to, in Poland it is not a very common to have open discussion about sexual lifestyle with a general physician. Also, the stress caused by false HIV positive or negative test on a patient would be tremendous.

30% relative HIV detection shift to early-detection in the UK (from 58% to 70.6% early detected patients) resulted in instant 785 per year or 3923 early-detected patients over the five-year span. If the NHS projected cost savings of £21,608,562 are deployed to capture this 3923 early-detected patients, it would mean that it would require a detection of at least 9,350 new HIV infected individuals, based on the premise that late detected patients represent 42% of all newly-detected individuals; assuming a detection rate of 2 per 1,000, after 4,672,500 completed tests, with the required maximum cost per test of £4.62, cost savings would be neutral.

In the London and Leicester pilots, 7-11 cases were found per 1,000 tests administered, while in Brighton the pilots found fewer than 2 new cases per 1,000 tests, which seems surprisingly low for such a high-prevalence locality. Thus, if we assume a detection rate of 3 per 1,000, the cost per test could rise to a maximum of £6.93 for cost savings to remain neutral. With the value of life years saved, cost of the test could rise to a maximum of £6.20 and £9.29, respectively. Increase in number of HIV tests performed would probably lower the cost of actual HIV test, which would in return further add value towards cost neutral HIV testing in low and middle-prevalence settings. However, this is valid only under the assumption that HIV tests will not present any false negative or false positive results. Further limitation of this UK study includes no consideration for educational marketing campaigns and additional general physician visits necessary to address the most relevant population that needs to be HIV tested. In addition to, HIV prevention interventions targeted at high-risk populations, those associated with the care continuum, and those that reduce the transmission risk of HIV-infected people are typically the most cost-effective (53). As such, decision makers may consider these results when building more effective HIV prevention programs.

The range of costs and benefits that are included in the economic calculation depend on the perspectives and attitudes of the decision-maker. For economic evaluations submitted to NICE

and Polish HTA Agency, a formal cost-utility analysis is required. Author did not formally utility-adjust survival in this study in the interests of avoiding complexity, but £7,000 in Poland and £20,000 in UK per life-year saved can be taken as a reasonable proxy for both Polish HTA Agency cost-utility threshold of £6,000 - £12,000 and NICE's stated cost-utility threshold of £20,000-£30,000 per QALY gained (51). If the utility of a year spent in asymptomatic HIV+ infection with CD4+ cell count between 200 and 500 cells/ $\mu$ L is 0.933 (54), a valuation of £21,500 per life year (LY) gained corresponds to  $\text{£}21,500 * 0.933$ , or approximately £20,000 per LY gained in the UK and £6,500 in Poland. Economic evaluations submitted to NICE should consider all relevant NHS costs, measured over the full period of time that they accrue. The horizon of this study was limited to 5 years because any investment to hasten HIV detection is likely to have to be self-financing within a short timescale, as "new" money may not be available. Even though relatively few deaths occur in the 5-year timescale, the impact of valuing life-years saved at £20,000 per annum becomes substantial by year 5. In contrast, avoidance of onward HIV transmission has a smaller impact on costs over the 5-year timescale of this analysis, but this effect does compound to become more significant in a lifetime analysis.

This study has a number of limitations. The CD4 level of 350 cells/ $\mu$ L within 3 months of diagnosis as a threshold between early and late detected patients was utilized in both Poland and UK scenario. Even though, 2015 guidelines have raised this threshold, the impact would probably be similar, as higher the CD4 level, the greater the proportion of late detected patients (e.g. <500 cells/ $\mu$ L), but at the same time smaller the gap in savings between late and early detected patient. The cost inputs were derived from the most comprehensive source available in the UK: the National Prospective Monitoring System, which has been recording the care provided to HIV patients at 15 participating hospitals since 1996. The most recent UK cost data are from 2008, which were adjusted for inflation to 2013 costs. In the absence of costing



based on late or early detection in Poland, ratio based on UK resource use between the two groups was further applied on the average 2013 cost of treatment components (inpatient, outpatient cost) in Poland to derive total cost of late or early detection in treatment-naïve or treatment-experienced patient (55). Further cost adjustment was made due to Polish NFZNFZ annual reimbursement cap per capita for ambulatory care and antiretroviral drugs which are purchased using tender process. We used 2013 average PLN / £ (GBP) currency exchange rate of 5.25, however currency exchange rate is subject to fluctuation that may impact the results. As such, GBP currency was calculated based on actual PLN cost. In the absence of detection rate by CD4 cell count in Poland, UK rate was adjusted based on the percentage difference of newly-detected AIDS cases (Poland 9.3% vs UK 5.3%), which is a very conservative estimate of 46% vs 42% reported as late-detected HIV patients in Poland vs. UK, respectively. The rate of onward HIV transmission per HIV positive individual of 2.773% is a UK national average (43), which was assumed for Poland, as there was a small difference between two countries when comparing the ratio of newly detected patients to existing HIV patients (5,7). The actual figure is likely to vary between countries areas according to prevalence. In the absence of data, we performed sensitivity analyses around feasible ranges for this parameter. There was total of 36 and 211 new HIV infections avoided in Poland and UK over the five-year span, respectively (Figure 3). If the study horizon expanded from 5 to 10 or 15 years, there would be a great impact of onward transmissions, however payers are very hesitant to observe study results that expand beyond 5-year horizon.

Another limitation of the study is relating to the barriers to HIV screening. Barriers to HIV screening are numerous and may include: general physician not having the time to ask all the right questions to identify potentially HIV infected patient, or not being familiar with the health conditions associated with HIV, potential patient having fear of a HIV positive test result being reported back to insurance, stigma of facing the family and friends, being identified in the national HIV registry, being identified as gay / bisexual, being seen entering HIV specialist

clinic, and above all the experience of having false positive or negative HIV test results.

Using Cochrane Effective Practice and Organisation of Care (EPOC) 2002 taxonomy, these HIV screening barriers translated, could be classified using 9 categories: information management, clinical uncertainty, sense of competence, perceptions of liability, patient expectations, standards of practice, financial disincentives, administrative constraints and other).

UK system is slightly better organizer to handle these barriers, than the Polish. Part of this success is relating to a slightly more open UK culture, as well as regulations, which allow for HIV test being done in any institution vs. a visit to the Polish HIV specialist. Doing HIV testing can be done confidentially in the UK vs. being automatically registered in a Polish national HIV test database. Hence, there might be more investment and regulatory changes needed in Poland vs. UK, to achieve the same prevention results using the same strategies.

## **Conclusions**

The results of the study clearly show that a shift from the late detection of the HIV prevalence to the detection at the early stages will enable a budgetary saving that can be used towards the HIV testing. The cost of undertaking the test should be lowered to allow many people access the service. The government should also introduce measures to prohibit the private sector, which increases the costs of undergoing the test. It has been established that each year many individuals in the world succumb to death due to the development of the Acquired Immunodeficiency Syndrome (AIDS) (26). The treatment of the disease has not yet been discovered. The current medications aids in the suppression of the development of the virus as its progression rate is lowered. The use of the anti-retroviral drugs has increased the chances of the survival of the patients. It has been studied that five people become infected with the disease for every two person that accesses the therapies. Scientists have shown the essence

of early detection of the diseases as most of the youths whose infection is detected while at the toddler age have increased chances of living a normal life (15).

The individual members of the parliament and policy makers are not conscious of the actual complications developed by the patients and the savings incurred while switching from the late to the early detection of the AIDS. Studies have shown that the legislators are not conversant with the investment to experience budget neutrality. Scientists have tried to make these terms clear through the establishment of studies relating to the actual categories of the patients problems. The research indicated the trouble the disease brings to the affected family members. The effects of the early versus the late HIV detection in the United Kingdom and Poland was measured according to the humanistic, economic, as well as the clinical burdens imposed on the society and government by the patients (26).

The study was conducted in three different categories. The first stage was a systematic literature review that explains the burden the illness through the relationship between the early and the late detection of the HIV. The review was carried out through the CRD, EMBASE, and the MEDLINE to aid in the establishment of the guidelines and clinical trials as well as the methodology section that was published between 2008 and 2016 in the 26 European Union countries, the United States of America, Canada, and the Non-European Union Central European nations. The second stage was the modeling of the decision to be used in the regions of the United Kingdom and Poland. The ISPOR's governance principles were used to construct the decision model for the effects of the budget analysis guidelines. The final stage was to integrate the Sunrise modeling the committee on HIV and AIDS in the United Kingdom as it was presented in the UK's Parliament, the House of the Lords (15).

More than thirty thousand individuals in the Republic of Poland were infected with the virus, with the majority number being not aware of the disease as of 2008. Males were found to be high prevalent to the development of the illness. In the United Kingdom, about 107, 800 were recorded to possess the virus with about 24% being unaware of their condition. A late

diagnosis of the disease, which is due to the decrease of the CD4 count to less than 350 cells/ $\mu$ l. Early HIV detection of the virus helps in increasing the life expectancy of the patient as well as the reduction in the costs incurred. The governments in both countries give out clear national guidelines on the benefits of having the test to aid in early diagnosis before the virus become complete and in multiple numbers (56). Sunrise was found to predict the importance of the early detection of the disease that would aid in the reduction of the medical costs as well as increase the chances of survival of the patient (The Antiretroviral Therapy Cohort Collaboration (ART-CC), Canadian Observational Cohort Collaboration (CANOC), the UK Collaborative HIV Cohort Study (UK CHIC), the Collaboration of Observational HIV Epidemiological Research in Europe (COHERE), 2016).

The selection of the keywords in the study was a frequentative activity. The term HIV detection was found to have multiple interpretations with some having it as a diagnosis while others have it as presentation (9). The study was found to include all people of all ages regardless of their occupation as long as an individual has developed the illness. The study was conducted different with many keywords, life expectancy, and mortality rate being included. MEDLINE, CRD, Cochrane Library, and the EMBASE were on the forefront benchmark to conduct a literature reviews regarding the clinical trials, reports and the guidelines that had been published in the United Kingdom, Wales, Scotland, United States, Northern Ireland, England, Australia, Canada, and Norway among other nations of the EU-26 (26). The systematic and successful literature review shown that the study design key parameters were effectively established to prepare the solution to the research question. The details for the understanding of the used parameters can be found in the section of the model framework. The research was found to provide information regarding the native nationals whereby the foreign national were excluded from the study. Scientists found that the viral load of the virus is an essential laboratory indicator of the functioning of the immune system in the infected individuals (35).

The assessment was established by the Effective Public Health Practice Project (EPHPP) criteria. The author had to rate the quality of the components under study in the form of the study design, biasness, blinding, methods of data collection, confounders, integrity of the intervention, as well as the withdrawals. The reviewer of the study rated all the components as strong, moderate, or weak. The Sunrise, which is user-friendly Microsoft excel program with the graphical user interface, was designed to approximate the potential savings of the budget and the survival consequences of the detection of the virus from individuals while on the early stages of development. The program observed the activities of the disease for a time interval of five years as it is the most appropriate period for the best decision making as well as the policy makers could consider. The survival of the aged, whose disease had developed to the maturity stages was conducted based on the COHERE study for five years. The virus detected in the patient was categorized into eight different groups.

The hazardous rate was influenced by the patient's age, sex, and the period of the detection, whether early or late. The per annum costs to cater for the disease was the total sum of all the categories of the HIV and AIDS clinical care from a patient's perspective viewpoint (56). This included the inpatients, day patient cares, the outpatients, costs of the ART based on the current NFZ Republic of Poland NFZ and guidelines of the British HIV Association (the BHIVA) (9). In the Republic of the Poland, there existed 1098 cases of the viral disease as on the time for the study with 102 being the newly recognized cases of the disease and 61 as the total number of the registered deaths in the year 2013. In the United Kingdom, on the other hand, the estimated cases were 6,000 with 320 newly detected cases and death toll of 530 patients in the same year. This translates to an approximated diagnosis of the disease rate of 1.0 person per 10,000 people (The Antiretroviral Therapy Cohort Collaboration (ART-CC), Canadian Observational Cohort Collaboration (CANOC), the UK Collaborative HIV Cohort Study (UK CHIC), the Collaboration of Observational HIV Epidemiological Research in Europe (COHERE), 2016).

The systematic literature review found 102 articles that were based on the full review. However, 70 of the reviews were excluded from the study. 29 reviews were removed from the study due to the specifications on the population, which had a small scope of the analysis related to the different categories of the patients. In the design of the Sunrise model, 32 reviews and commentaries were incorporated (25). Thirty percent relative shift of the detection of the virus from the 42% to the 29.4% of the late detections of the disease over the past five years, in the United Kingdom, would result in an estimated direct income and saving of about 28,811 Euros per patient. Besides, it would lead to the increase in the life expectancy, and avoidance of more than 200 cases of the virus infections. In the Southwark and Lewisham (LSL) population of 838,005, about 53 of the transmission infections were shun for the past five years (26). The avoidance of the infections increased the savings of the individual involved to a total of about three million Euros after the five years of the study.

The Geometric mean concentrations (GMC) impacts of the sensitive analyses were similar to the LSL (25). However, in the GMC, the magnitude of the saving is quite smaller than in the LSL. The GMC exhibits savings amounting to more than 2.5 million Euros after the study. The K and M has a smaller population compared to the GMC. This leads to a reduced prevalence of the virus at 0.90 per 1,000 individuals. This results in a reduced total base savings of 733,202 Euros after the five years of the study (35). The cumulative life years saved due to a thirty percent shift from the late detection to early detection and diagnosis for the years 1, 2, 3, 4, and 5 would be 0, 1, 2, 5, and 11 life years respectfully (26). In all the three settings, there would be certain days that would be avoided based on the thirty percent relative shift from the late to the early detection of the HIV. The total economic value based on the 30% shift over the five years can be estimated to be approximately 563,000 Euros. These amounts indicate the potential used to turn the policy into a real shift and maintain the budget neutrality. The breakdown was observed in six different categories, which are Inpatient care, Day ward setting Outpatient care, other non-HIV Drug cost, annual cart cost, and Tests & Procedures with

£188,133, £20,334, £31,250, £6,365, £272,161 and £45,197 having been saved after the 5th year respectfully (35).

The savings indicated after the five years by the Northern Ireland local health boards were £91,748, £9,917, £15,240, £3,104, £132,727 and £22,042 that were gained from the six categories under the study. The total cost from the saving was approximated to be about 270,000 Euros. In the three stages, the avoided number of days would sum up to 15, 13, and 12 based on the Inpatient, Outpatient, and the Day Ward respectfully. Early detection of the virus in the area after 1, 2, 3, 4, and 5 years would be 0, 0, 1, 3, and 5 years respectfully (21). There was a substantial saving in the cART costs while others remained constant. The savings recorded by the Local Health Boards in Scotland were £314,680, £34,012, £52,269, £10,646, £455,229, and £75,599. The total economic value was approximated to be £942,435 in a shift from late to early detection of the virus (15). The number of infection cases avoided was 0, 1, 4, 9, and 8 in the 1, 2, 3, 4, and 5th year. In the first year, the number of days that could be avoided in the Inpatient, Outpatient Care, and Day Ward settings was found to be 52, 46, and 8 days respectfully, which would amount to 588, 318, and 121 days. The cumulative life years saved due to the thirty percent shift from the late to the early detection in the 1, 2, 3, 4, 5th year would be 0.14918 years respectively (56).

In all the Clinical Commissioning Groups (CCGs) in England, a cumulative cost saving breakdown observed at six different categories after five years would be £7,082,063, £765,458, £1,176,355, £239,597, £10,245,215, and £1,701,403. In the CCGs, the highest amount of the savings appeared in the other drug and the inpatient care settings. The numbers of days avoided in all the three stages would amount to 1166, 1042 and 179 days in the first year and cumulatively to 13222, 7150 and 2728 days in the five years term (35). The total number of the HIV infections avoided in the 1, 2, 3, 4, and 5<sup>th</sup> year would be 0, 21, 62, 124, and 208 respectively. The cumulative life years saved after the 30% shift from the late to the early detection of the virus for the 1, 2, 3, 4, 5<sup>th</sup> year would be 0, 20, 81, 202, and 404 life years

respectfully. In the Republic of the Poland, a 30% shift of the virus detected was established. The direct saving after five years would sum up to 1,326 Euros per patient. The life expectancy would increase by additional 61 years and 36 cases of the virus would be avoided. The cost of the test in three different locations in the Poland was about five to six Euros per test par patient. It was established that the figures should be considered as indicative ones since once implemented they could be dragged down by the scope, learning effects, as well as the economies of scale (26).

The study in the Republic of Poland was conducted in deferent locations namely the Kujawsko-pomorskie, Lubelskie, Lubuskie, Lodzkie, Malopolskie, Mazowieckie, Opolskie, Podkarpackie, Podlaskie, Pomorskie, Slaskie, Swietokrzyskie, Zachodniopomorskie, mazurskie – Wielkopolskie, and the Warminsko. On average, the cumulative costs in the different areas based on the six categories, which are Other Drug cost, Inpatient care, annual cART cost, Outpatient care, Day ward setting, and the Tests & Procedures, after the five years of the critical study were £16,259, £25,385, £15,276, £1,091, £0, and the £321 respectfully (26). There was an increase in the Annual cART cost with progressive savings in other settings. In the other drug category, which is non-HIV and the Inpatient care units, a substantial amount of savings was recorded. The total cost savings after the five-year term of study based on the thirty percent shift from the late stage to early stage detection was approximated to be 306,247 Zl, which is equivalent to 58,333 Euros. This kind of economic value is an indicative of the amount of money to be spent in the reality shifting of the policy, whilst preserving budget neutrality.

In all the three settings, the Outpatient care, the Inpatient, and in the Day Ward care, there would be an increased shift from the late to the early detections of the virus based on the allocated thirty percent (25). 1, 1, and 0 days would be avoided in the first year which would result to 11, 2, and 0 days after the five-year study term. With reference to the thirty-nine newly detected cases of the virus in the first year divided 42%/58% between the early and the late



detection of the HIV, with a thirty percent shift to 30%/70% respectively would account for the virus incidences and the transmission multiplier scalar for the number of the HIV infections prohibited. The cumulative life years saved due to the thirty percent relative shift to the early stages detection from the late detection of the HIV and AIDS (35).

In the research, the savings due to the early detection of the infection by the HIV in the patients were approximated. The estimates were dependents of whether the assumption made in the late detection took place. To enable the working of the data, an assumed shift of thirty percent was used, which led to the reduction of the late diagnosis of the HIV from 42% to 29% in the United Kingdom and 46% to 32.2% in the Republic of Poland (11). Scientist found the 30% figure essential to the study since the success would have been viewed as the minimum credible outcome for the extensive testing program to be considered effective (26). The costs of the test in three settings in the Poland were established to be approximately five to six Euros. The costs were considered indicative of the scope, leaning effects, and the economies of scale could deter them. No evidence has yet been recorded indicating the quantitative relationship between the number of tests to be conducted and the resulting shift to the early detection. It was found that in Poland the total amount of the screen tests carried out nationally in 2013 showed a 0.6 HIV+ cases per 1,000 individuals. The early detection increased to 750 patients after the five years due to the allocated thirty percent shift. The late detection patients embody more than 46% of the infections of the HIV (9). The recorded National Health Service allocated costs to capture the 750 early infections detected patients were more than 1.4 million Euros, according to the conducted studies. The study failed to capture some of the patients as Poland has some fixed annual reimbursements policies per capita for the ambulatory care and the antiretroviral therapy administered to the patients (26).

In the United Kingdom, the early detection shift from the 58% to the 70.6% caused an instant increase in the number of patients to 785 per year or cumulatively to 3,923 after the five years of the study. The study clearly indicated that if the National Health Service could deploy the

projected savings of the twenty-one million Euros to capture the 3,923 patients, it would require a detection of 9,350 cases of the virus infected patients (53). Seven to eleven infections were recorded in individuals in the London and Leicester cities. In Brighton, fewer cases of less than two patients per 1, 000 tests were established. This turned to be a surprising degree due to the huge number of the residents in the cities. The study found that increased number of HIV detection tests would increase the chances of individuals conducting the tests and early detection the diseases as well as a reduction in the costs of undertaking the tests (35). The tests to be used should be accurate not to give out false results that would result in poor responses to the medical requirements of the individuals as well as government support and usage of the money. The recorded cost effective techniques are the ones targeted at the high-risk populations, who are normally associated with the care gamut. The policy and decision makers are advised to consider the allocated methods for the tests in the construction of better and more efficient HIV spread prevention techniques (11). The attitude of the policy makers is of the essence in the calculation of the costs of the tests and benefits incurred to the patients while budgeting for the economic status. An official evaluation of the economic status of the two nations is required for any submission made to the National Institute for Health and Care Excellence (NICE) in the United Kingdom and the Polish Health Technology Assessment (HTA) Agency. The study also exhibited outlined demerits (35). It has been discovered that the CD4 count of 350 cells/ $\mu$ L was used within three hours in the United Kingdom as well as in the Republic of Poland. The national prospective monitoring system that is being used to record the care provided to the patients by several hospital in early 1996 (53). The Euro (£) was calculated on the actual Great Britain Pound (GBP) and the Polish Zloty (PLN) values. Early detection of the disease increases the chances of survival of the individual infected with the long-term virus. The virus has no cure, and the late detection will lead to a lowered lifespan of the patient, who requires a lot of money for the individual to survive.

Results of this study indicate that in the case of two financially different healthcare systems, shift from late to early HIV detection will create budgetary savings that could be re-directed towards HIV testing. However, re-directed funds on their own will not be enough, as the current cost per HIV test is above the estimated required cost for a breakeven point. Thus, either a cost drop per HIV test due to greater consumption or further additional investment will be required to achieve budget neutrality.

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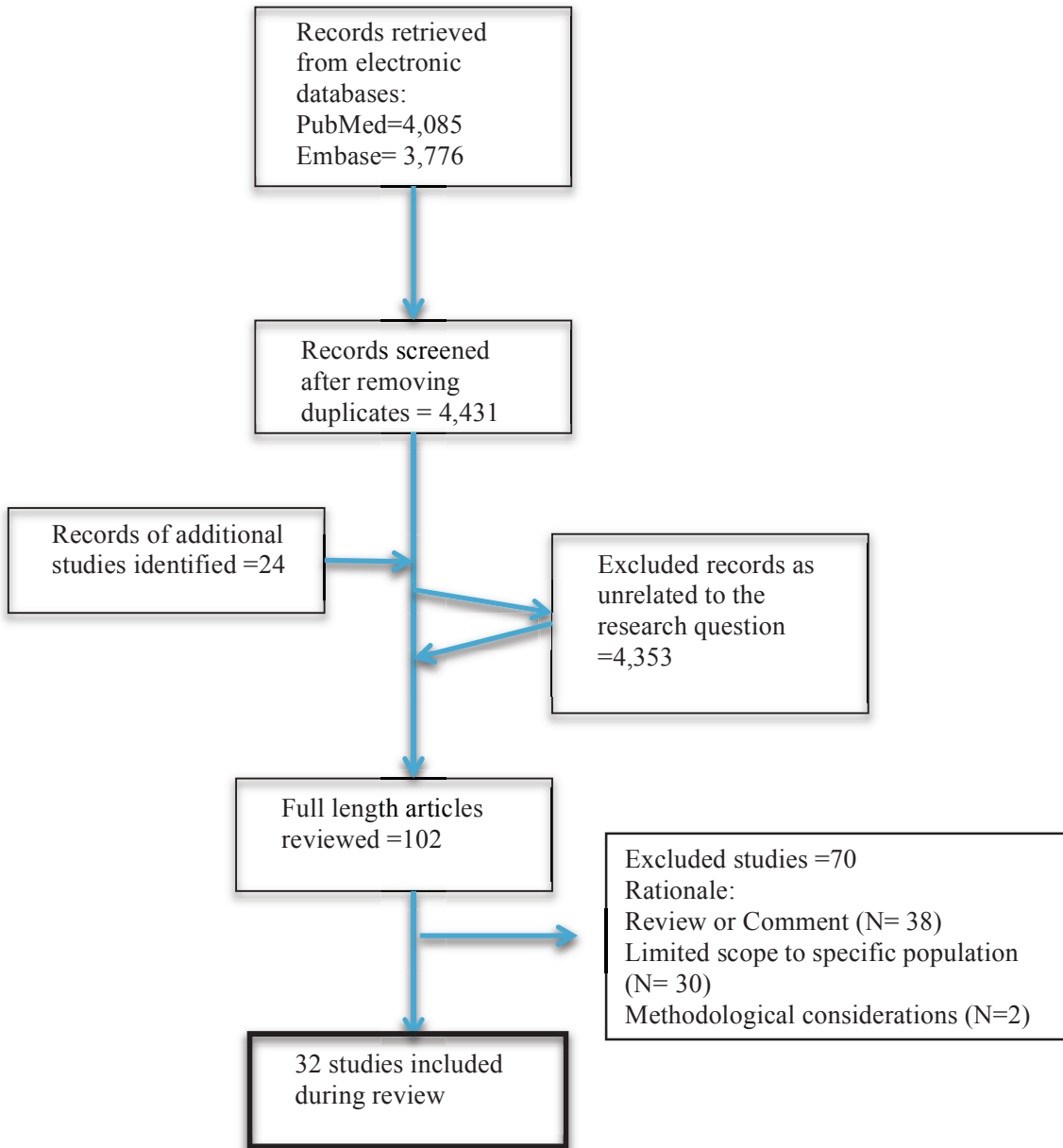


## **Tables and Figures**

### ***Figures***

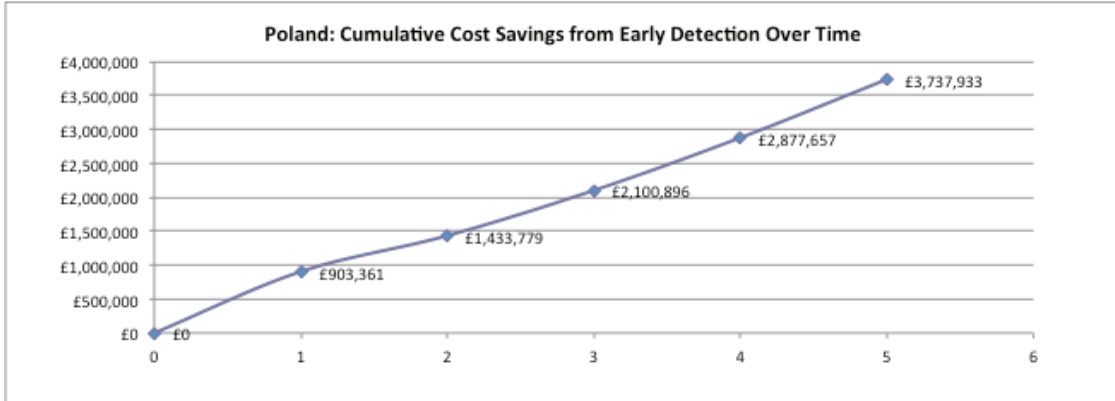


**Fig I. The systematic literature review flow**

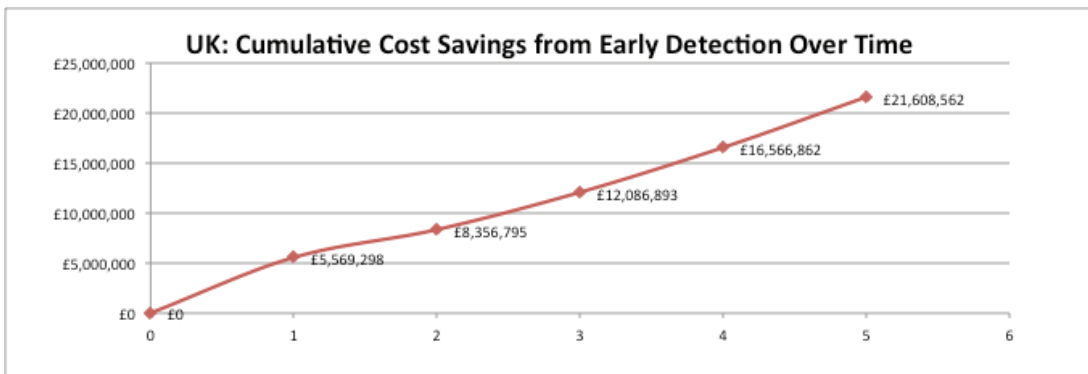


**Fig IIA. Financial impact of future versus current scenario with 30% relative shift towards early HIV detection for Poland and UK**

**Panel A - Poland**

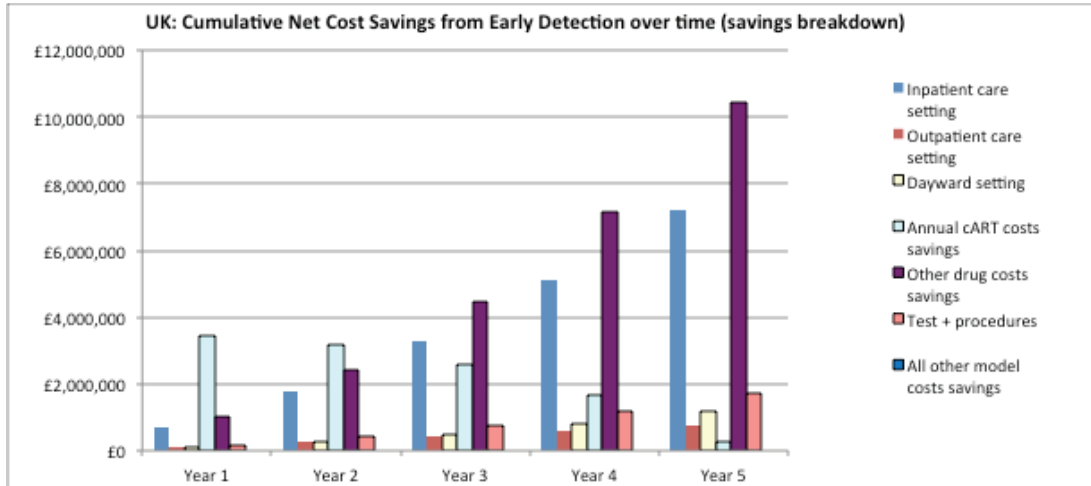


**Panel B – UK**

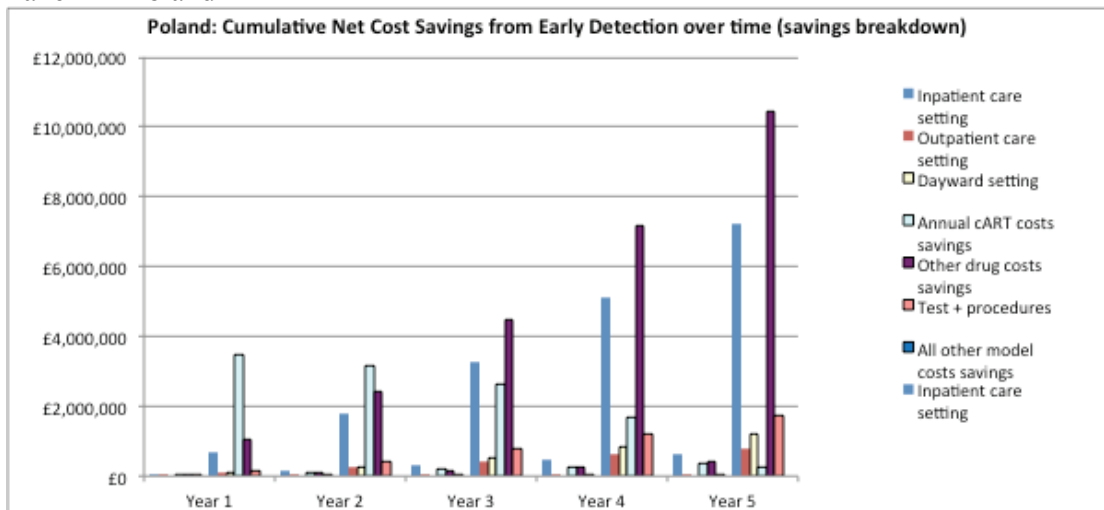


**Fig IIB. Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection for Poland and UK**

**Panel A - UK**



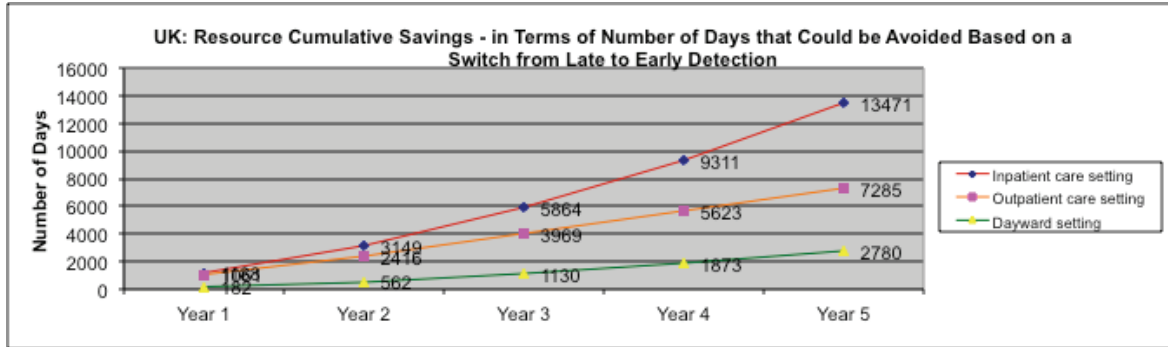
**Panel B - Poland**



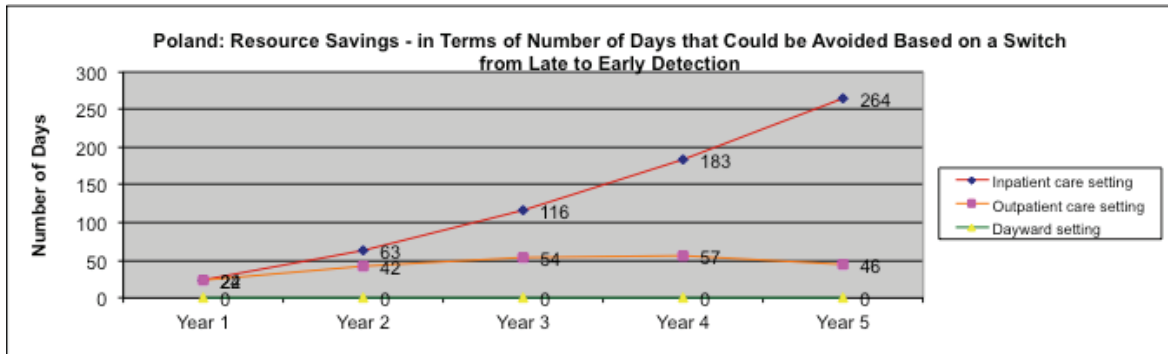
Polish system encompasses dayward clinics (day patient cost) under the outpatient care

**Fig III. Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection for UK and Poland**

**Panel A- UK**

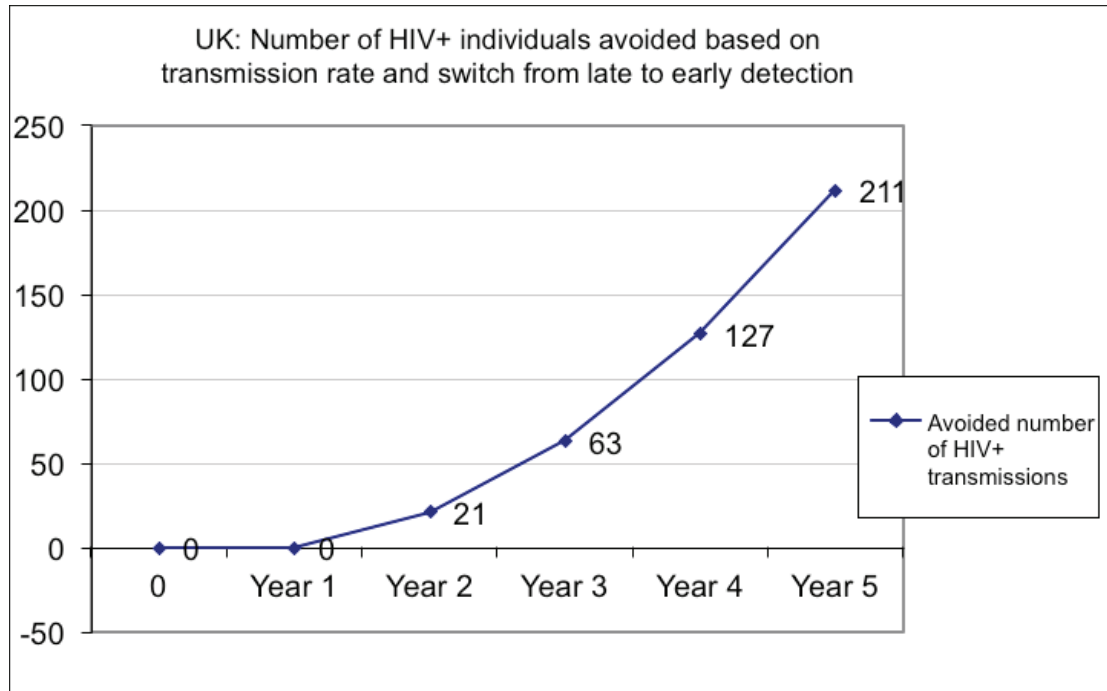


**Panel B- Poland**

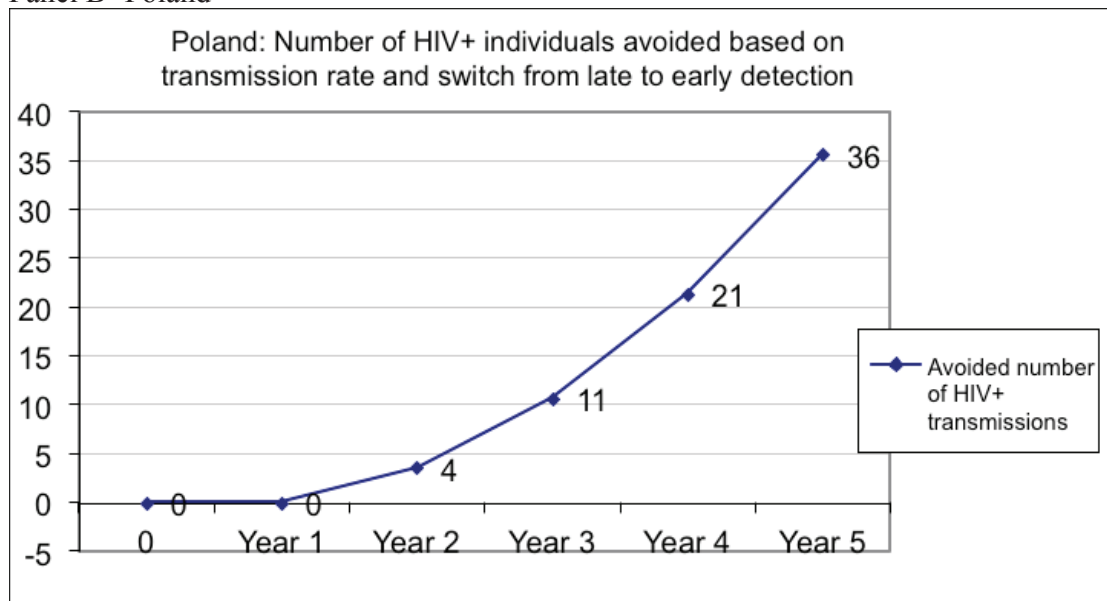


**Fig IV. Difference between future (30% relative shift towards early HIV detection) versus current scenario for UK and Poland**

Panel A – UK

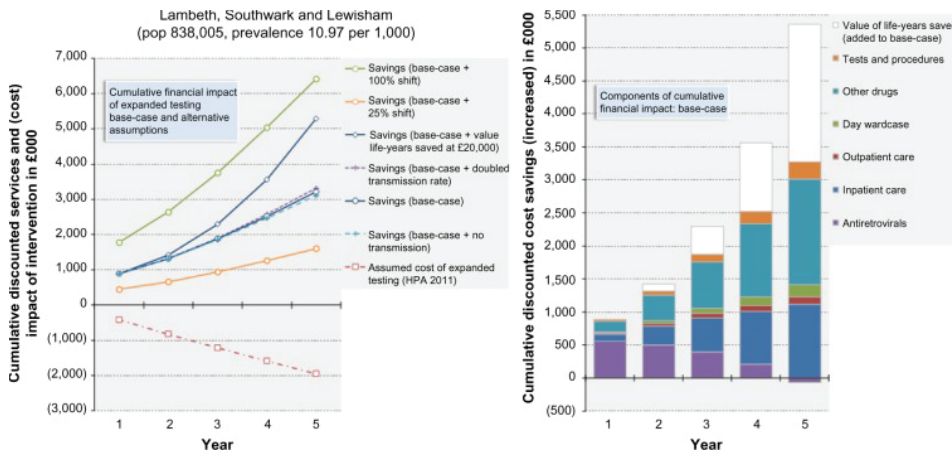


Panel B- Poland



**Figure V - Financial impact of 30% relative shift from late to early detection, translating potential cost savings into implementing a program of testing all acute hospital admissions and new GP registrations**

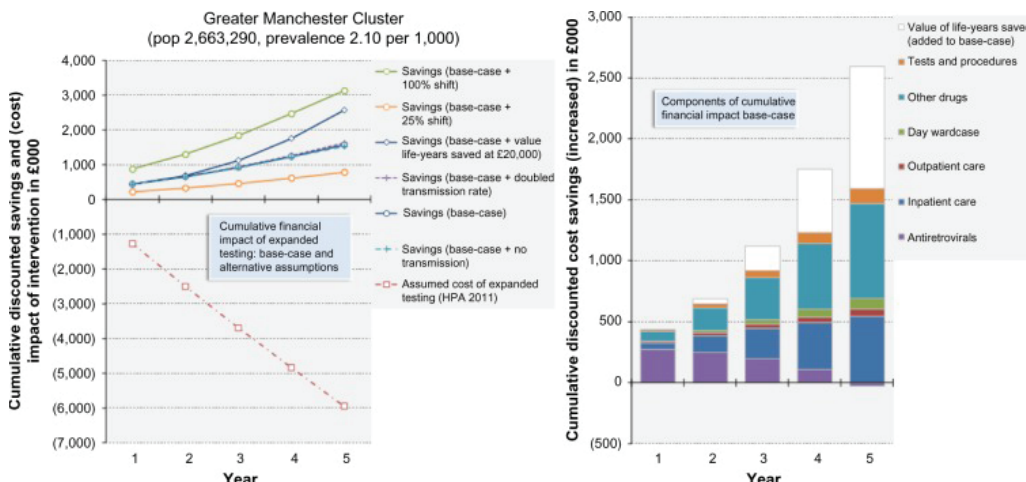
**Panel A - Lambeth, Southwark, and Lewisham**



**Notes:** Indicative enhanced testing costs based on HPA estimates are shown. The right-hand graph shows the components of the financial impact for the base-case (diagnoses made late reduced from 42% to 29.4%) scenario only.

**Abbreviations:** HPA, UK Health Protection Agency; pop, population.

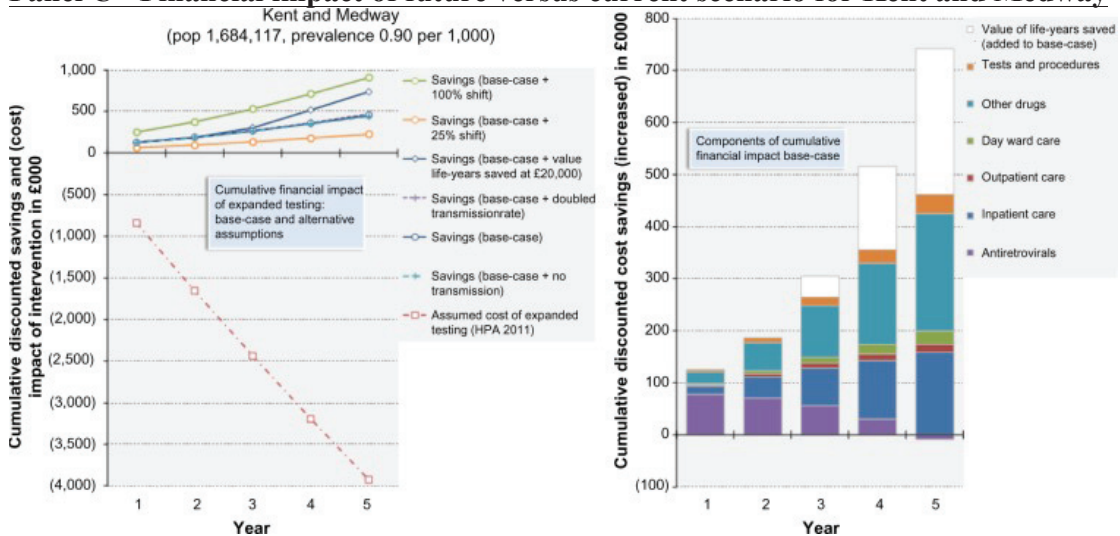
**Panel B - Financial impact of future versus current scenario for the Greater Manchester Cluster**



**Notes:** Indicative enhanced testing costs based on HPA estimates are shown. The right-hand graph shows the components of the financial impact for the base-case (diagnoses made late from 42% to 29.4%) scenario only.

**Abbreviations:** HPA, UK Health Protection Agency; pop, population.

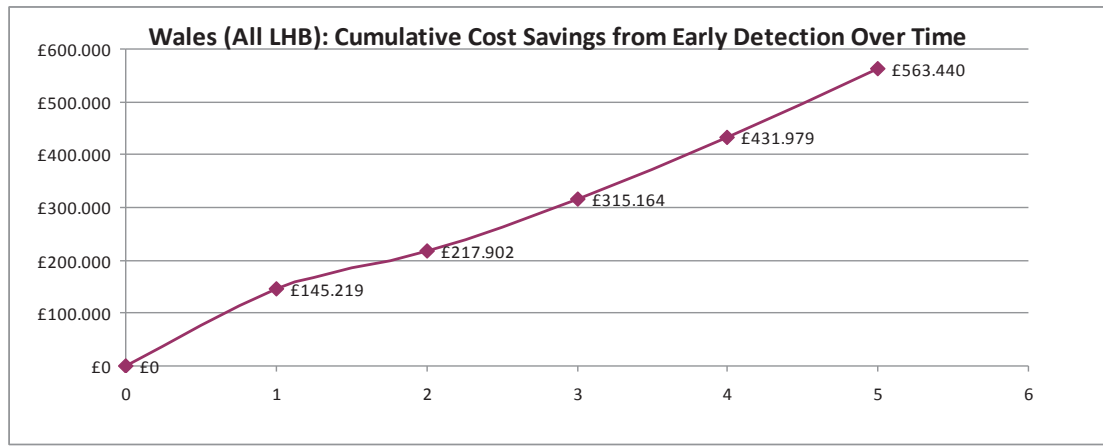
**Panel C - Financial impact of future versus current scenario for Kent and Medway**



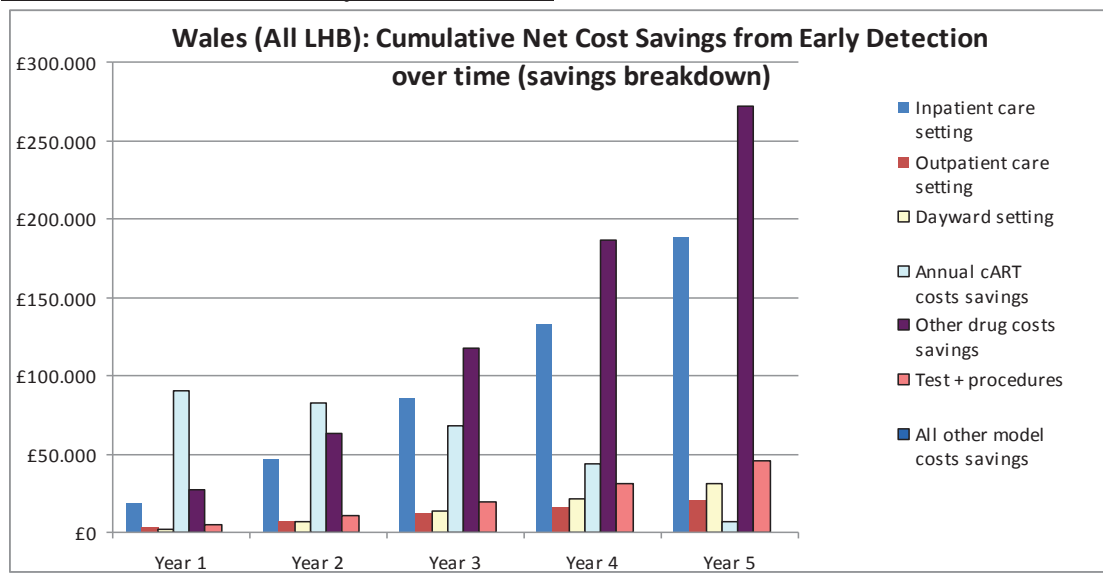
**Notes:** Indicative enhanced testing costs based on HPA estimates are shown. The right-hand graph shows the components of the financial impact for the base-case (diagnoses made late reduced from 42% to 29.4%) scenario only.

**Abbreviations:** HPA, UK Health Protection Agency; pop, population.

**Fig VI. Wales (All LHB), UK - Financial impact of proposed versus current scenario with 30% relative shift towards early HIV detection**

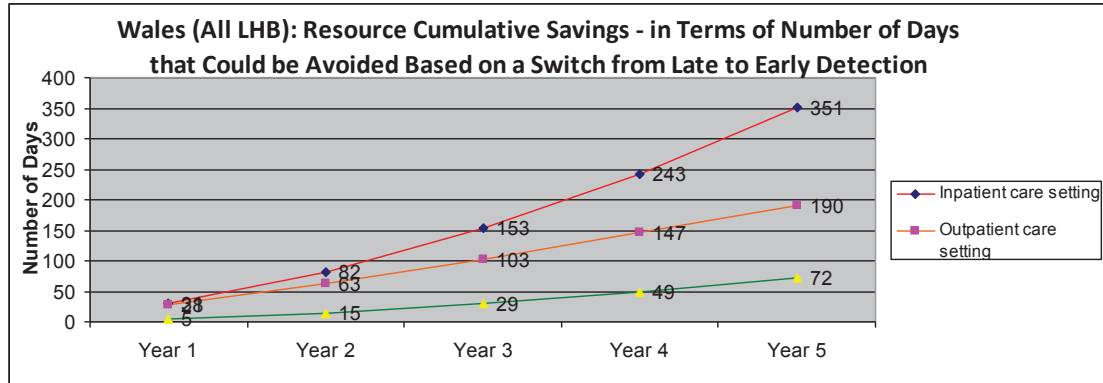


**Fig VII. Wales (All LHB), UK - Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

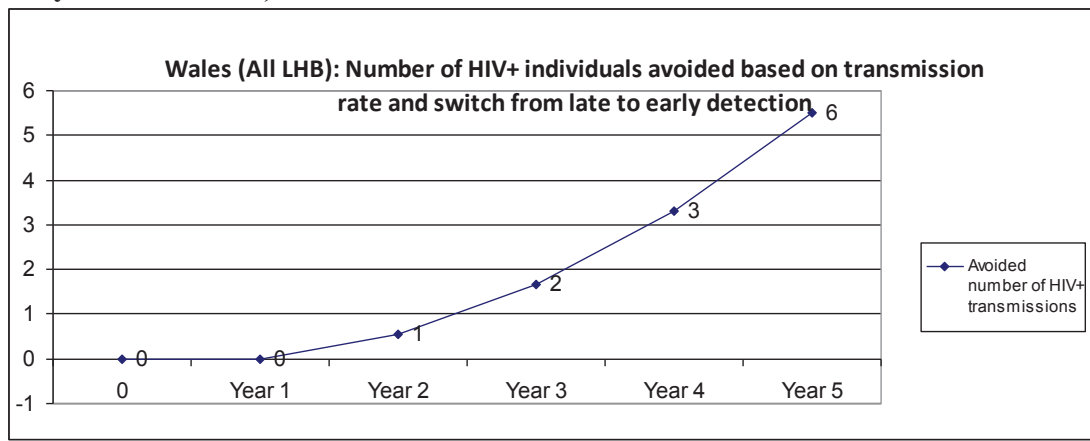




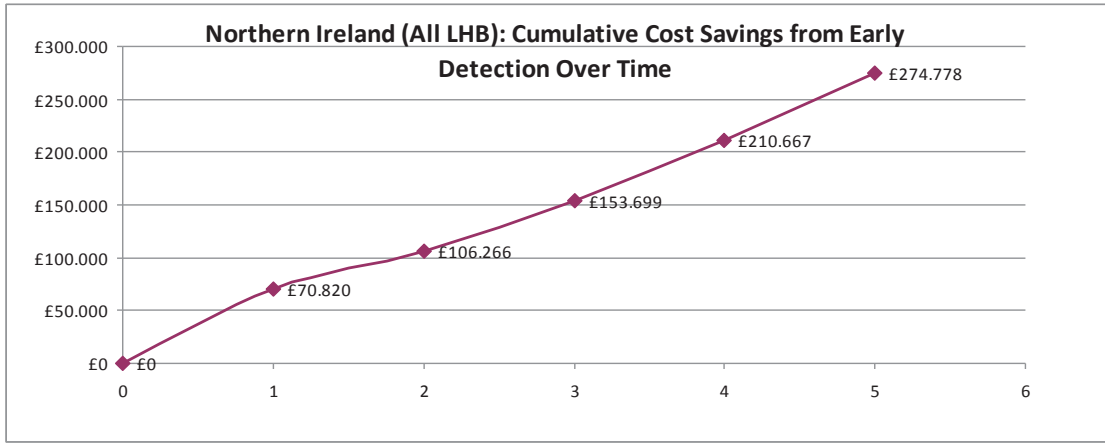
**Fig VIII. Wales (All LHB), UK - Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



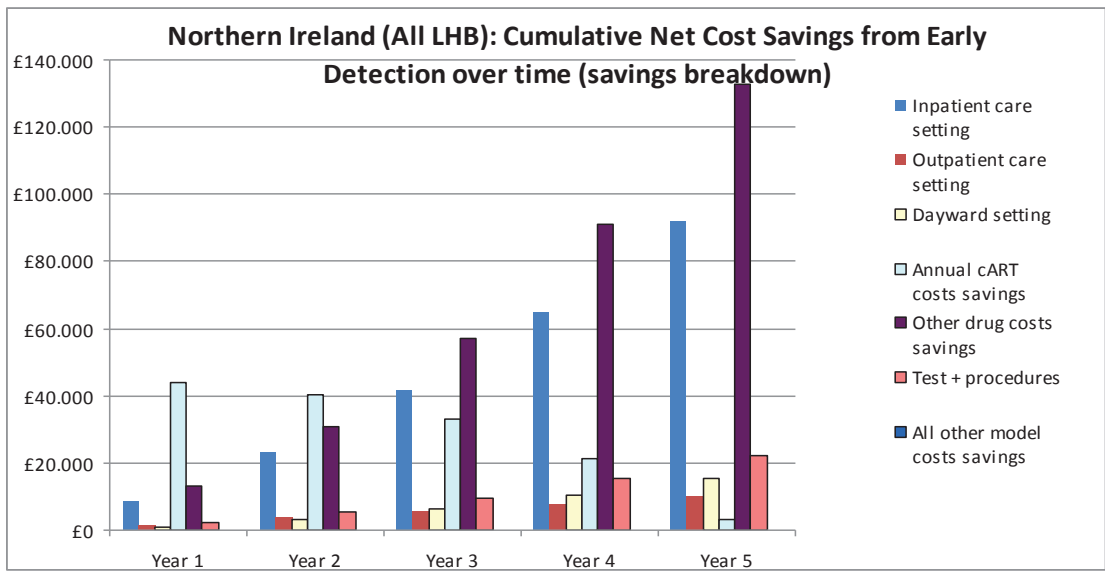
**Fig IX. Wales (All LHB), UK - Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



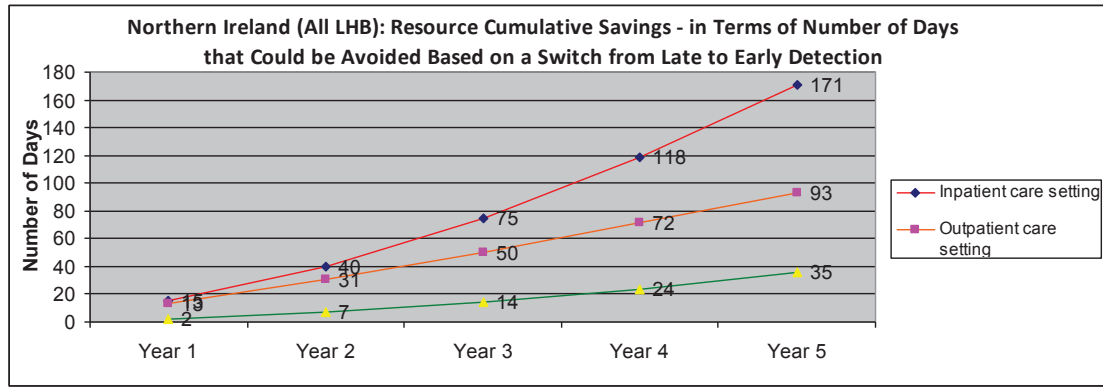
**Fig X. Northern Ireland (All LHB) - Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



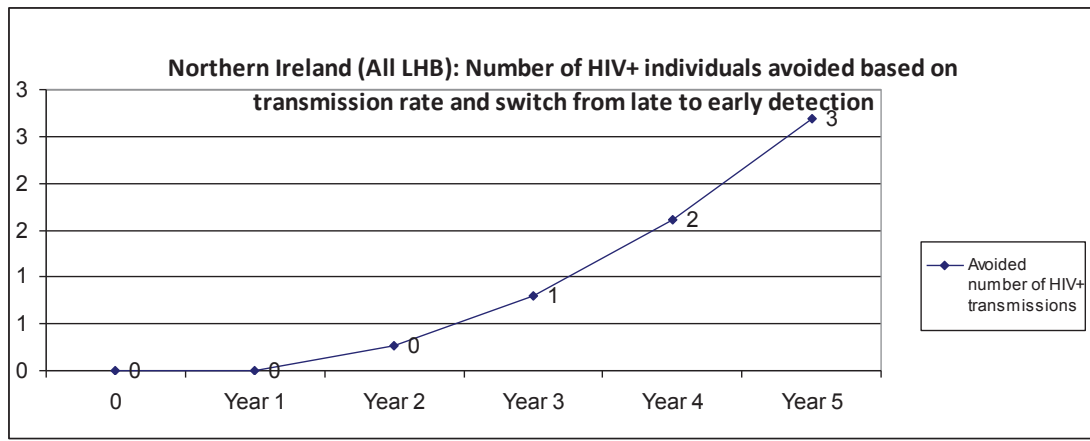
**Fig XI. Northern Ireland (All LHB) - Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



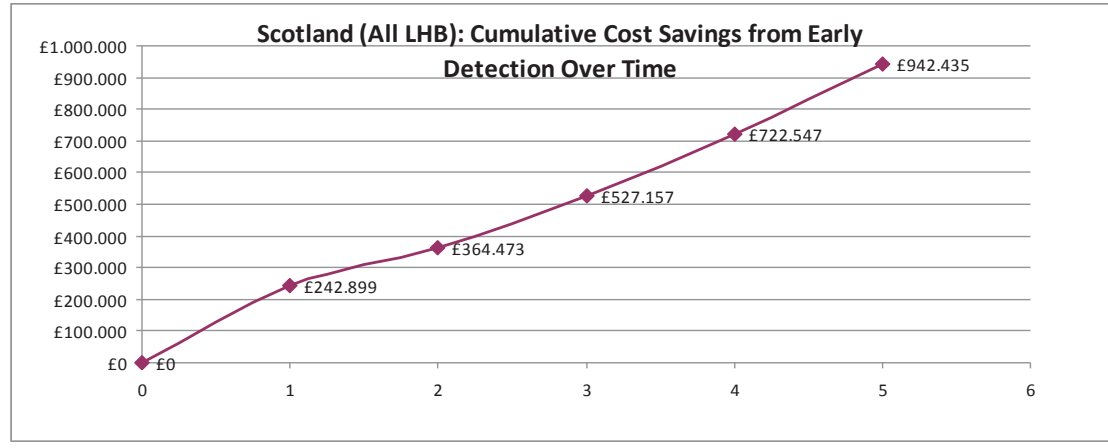
**Fig XII. Northern Ireland (All LHB) - Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



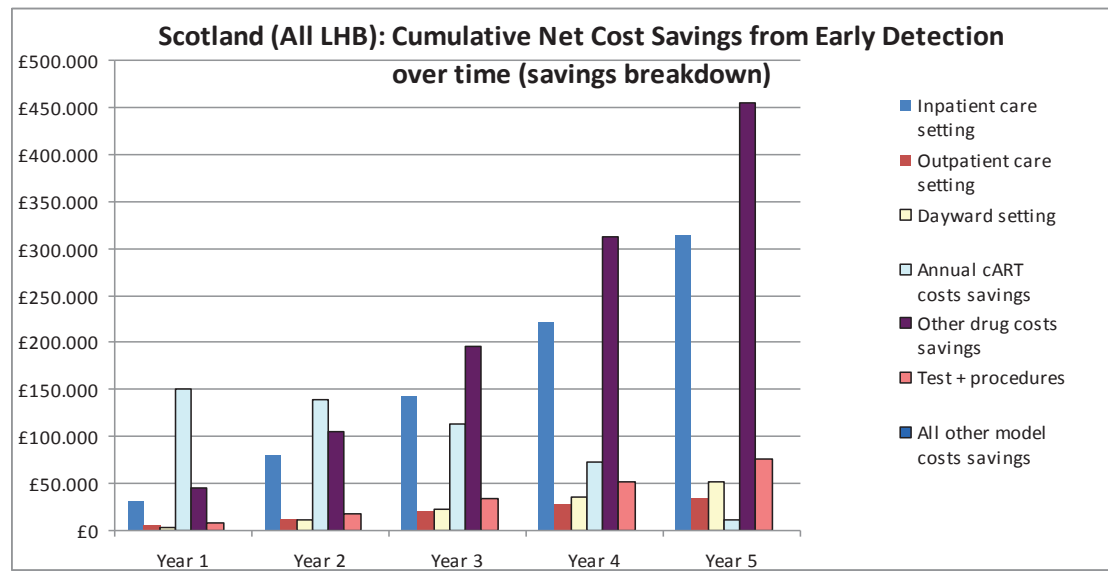
**Fig XIII. Northern Ireland (All LHB) - Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



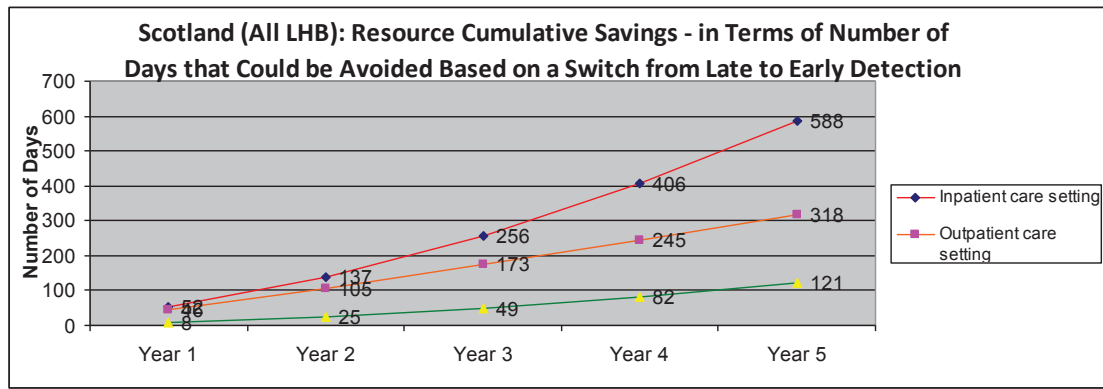
**Fig XIV. Scotland (All LHB) - Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



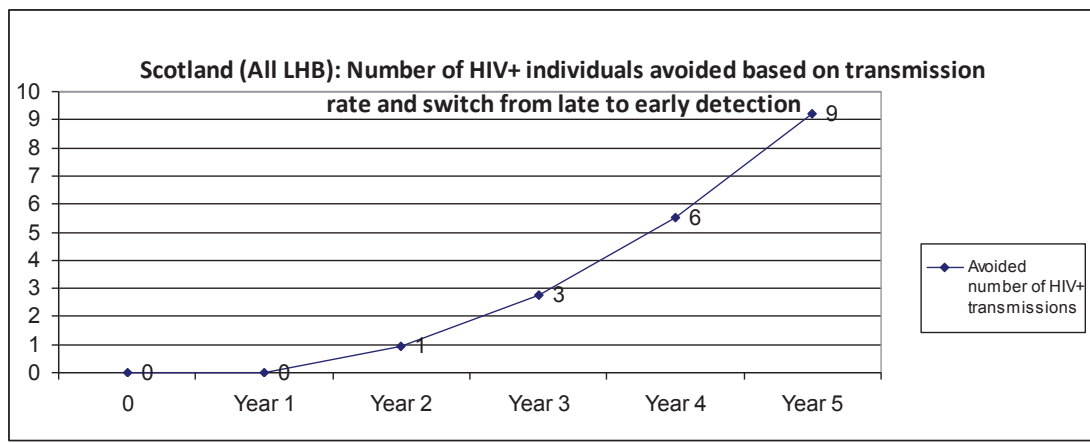
**Fig XV. Scotland (All LHB) - Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



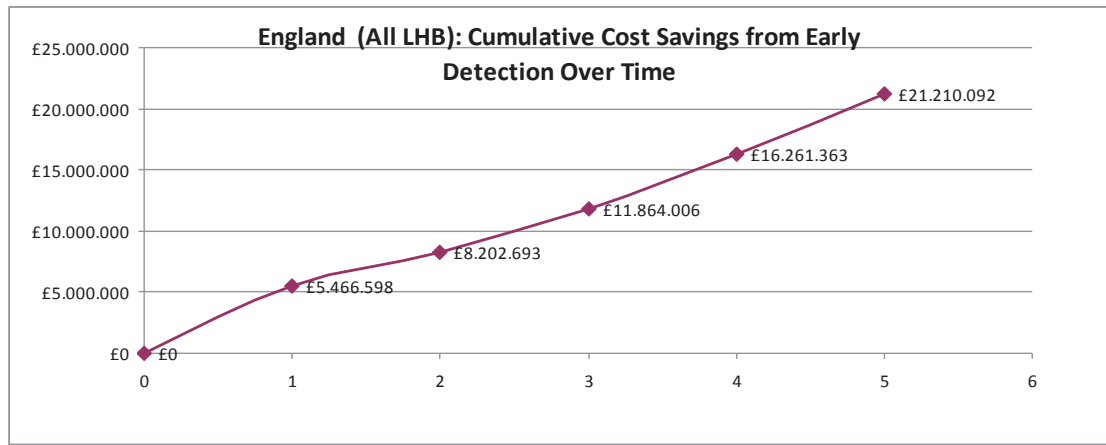
**Fig XVI. Scotland (All LHB) - Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



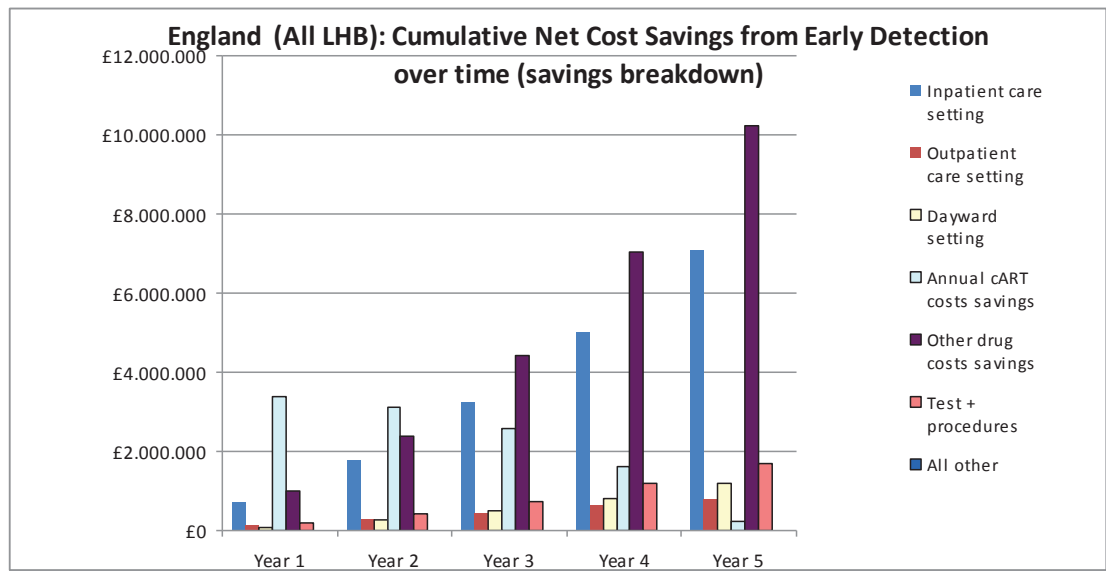
**Fig XVII. Scotland (All LHB) - Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



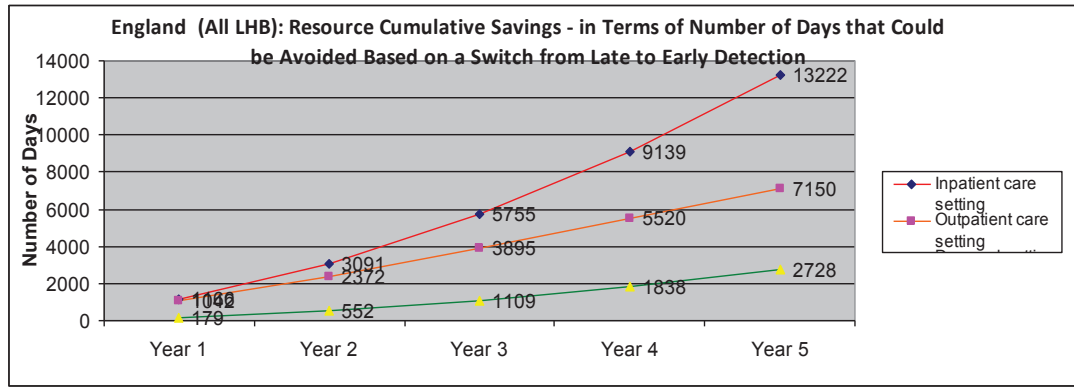
**Fig XVIII. England (All LHB) - Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



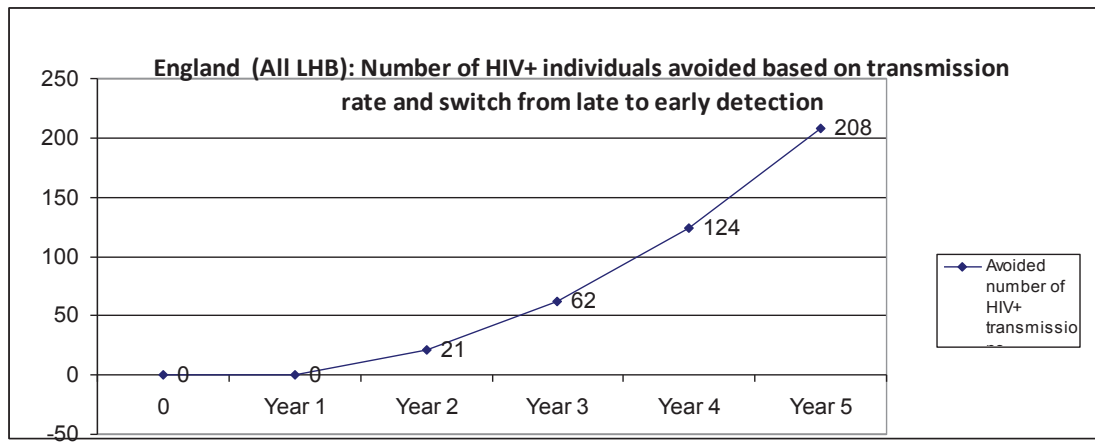
**Fig XIX. England (All LHB) - Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



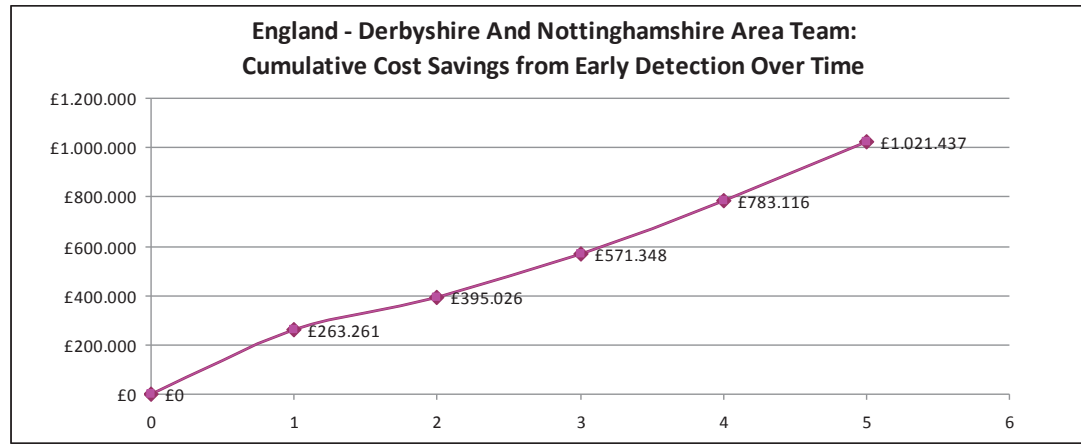
**Fig XX. England (All LHB) - Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



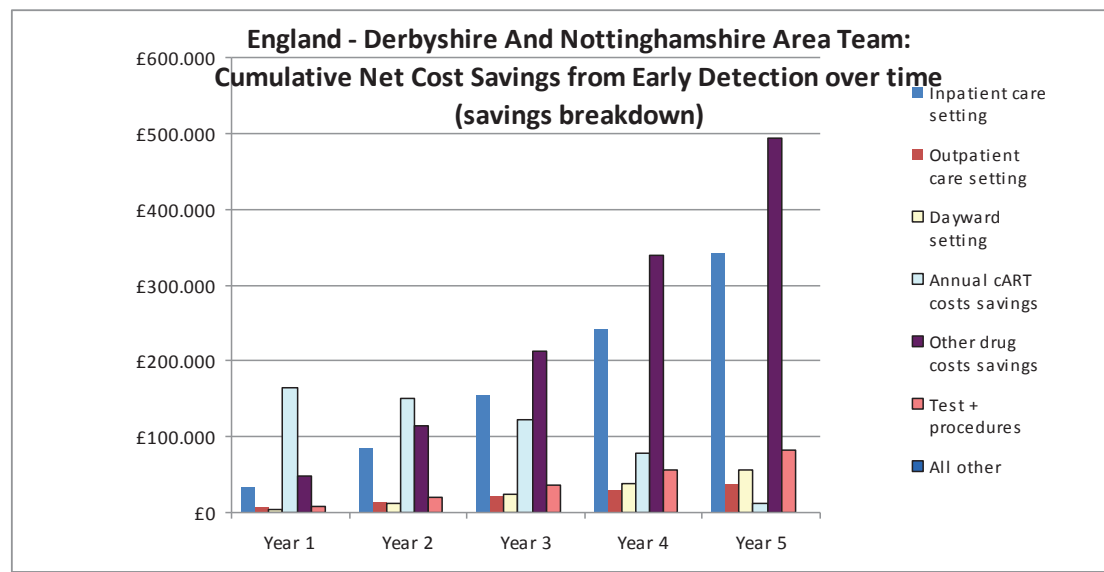
**Fig XXI. England (All LHB) - Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig XXII. England - Derbyshire And Nottinghamshire Area Team:  
Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

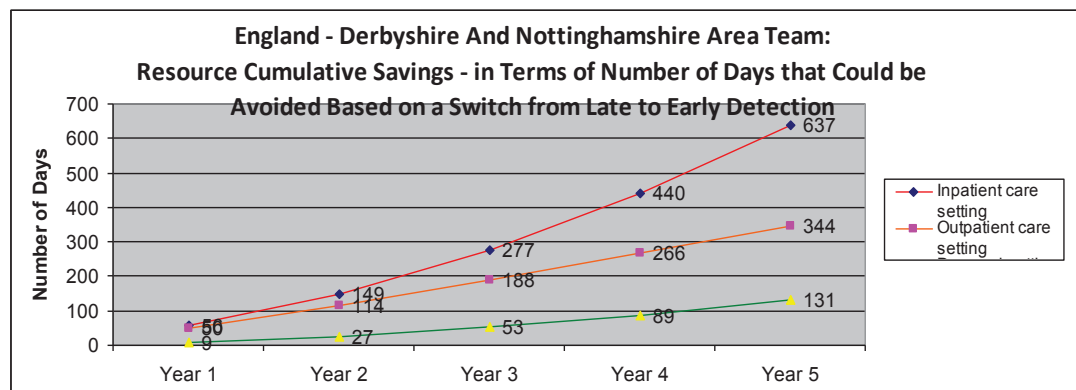


**Fig XXIII. England - Derbyshire And Nottinghamshire Area Team:  
Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

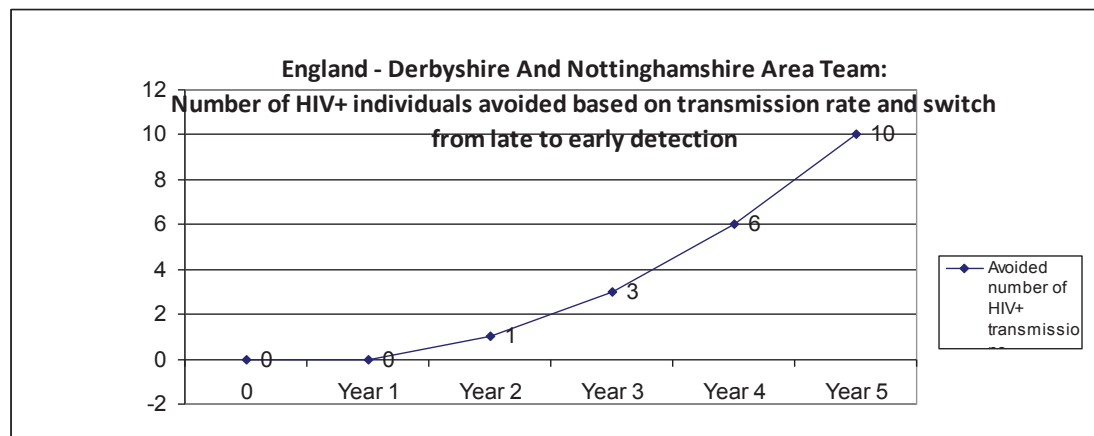




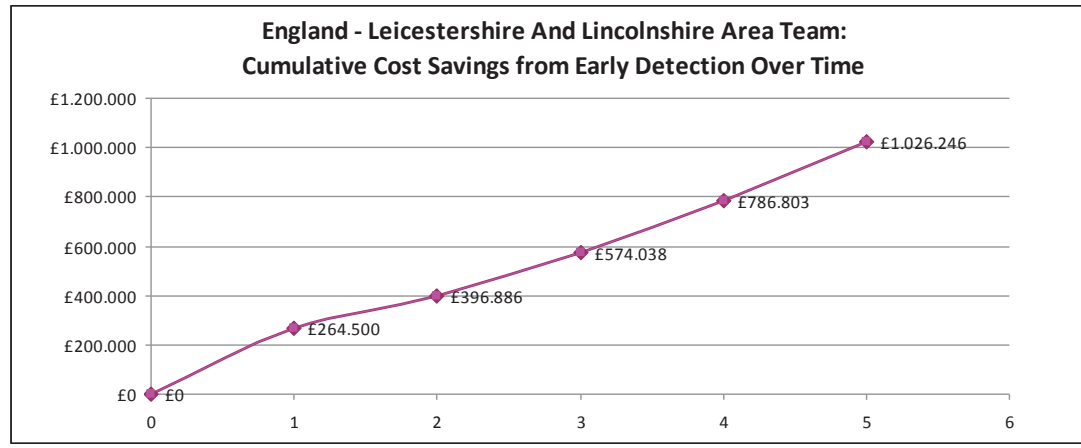
**Fig XXIV. England - Derbyshire And Nottinghamshire Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



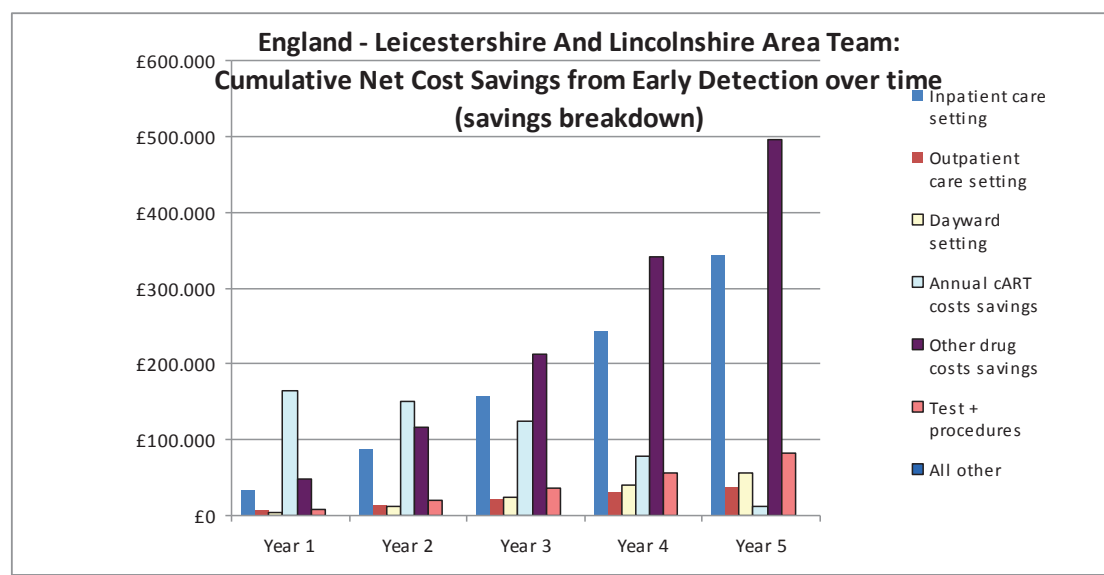
**Fig XXV. England - Derbyshire And Nottinghamshire Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



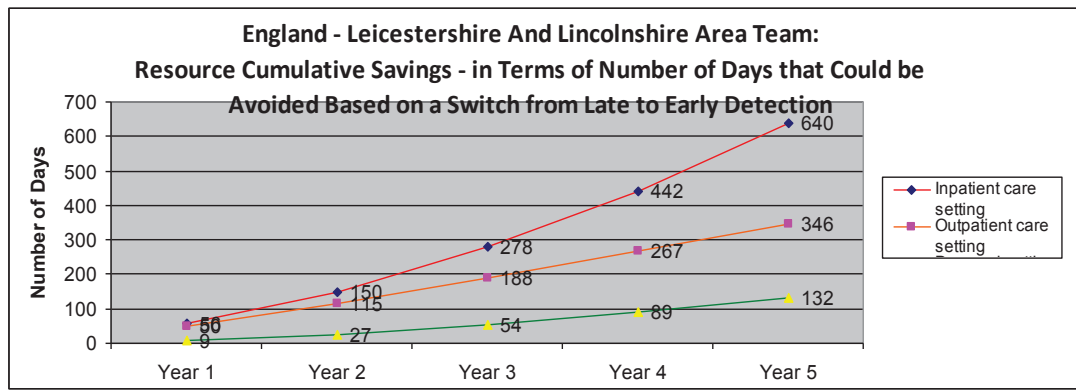
**Fig XXVI. England - Leicestershire And Lincolnshire Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



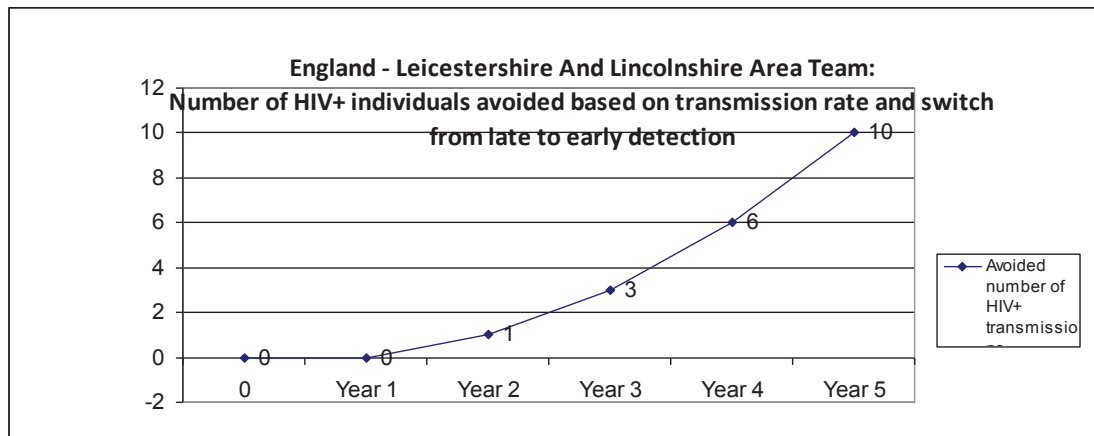
**Fig XXVII. England - Leicestershire And Lincolnshire Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



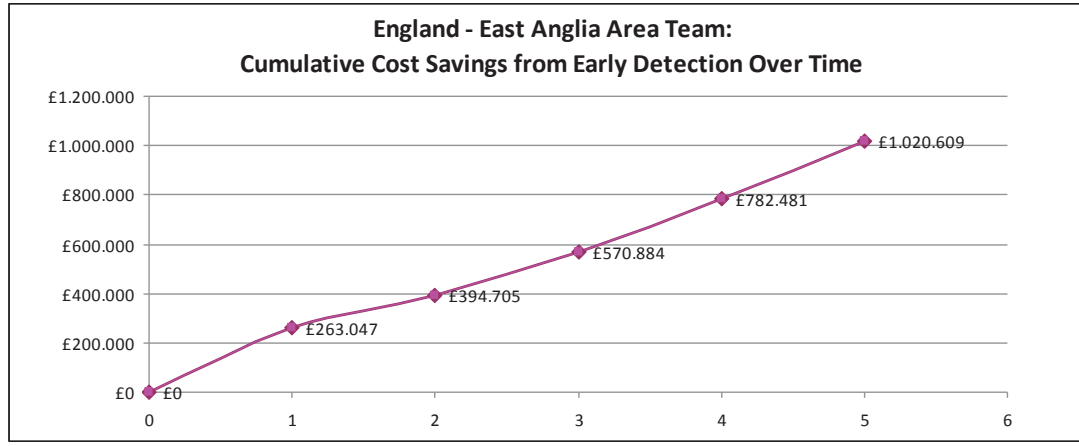
**Fig XXVIII. England - Leicestershire And Lincolnshire Area Team:  
Cumulative resource savings (number of days avoided) with 30% relative shift towards  
early HIV detection**



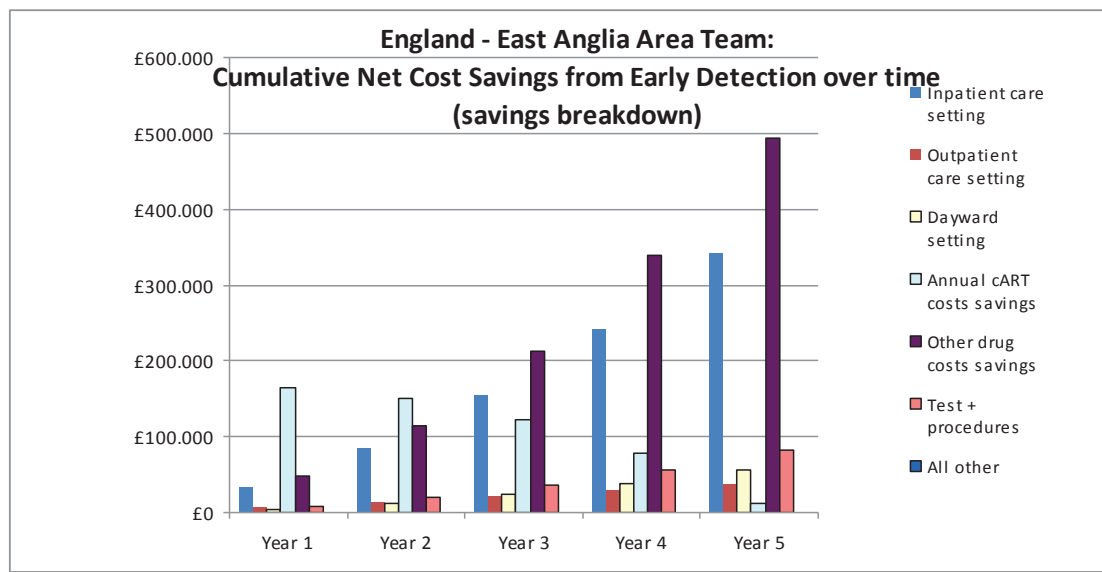
**Fig XXIX. England - Leicestershire And Lincolnshire Area Team:  
Difference between proposed (30% relative shift towards early HIV detection) versus  
current scenario**



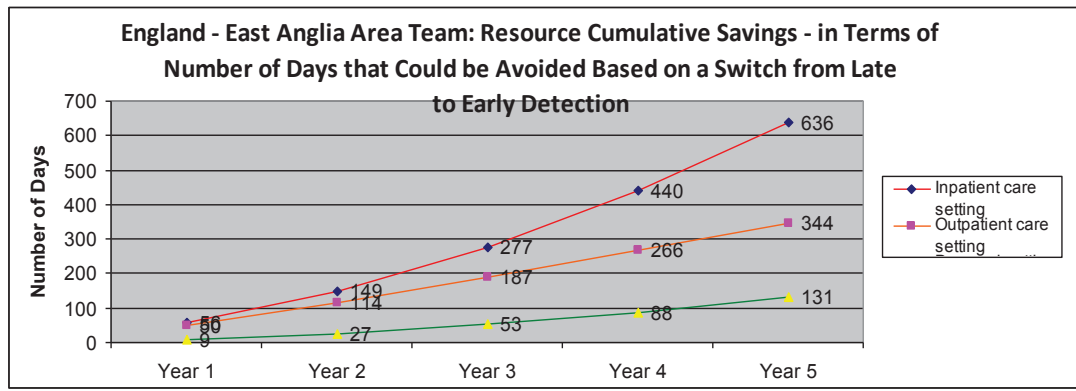
**Fig XXX. England - East Anglia Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



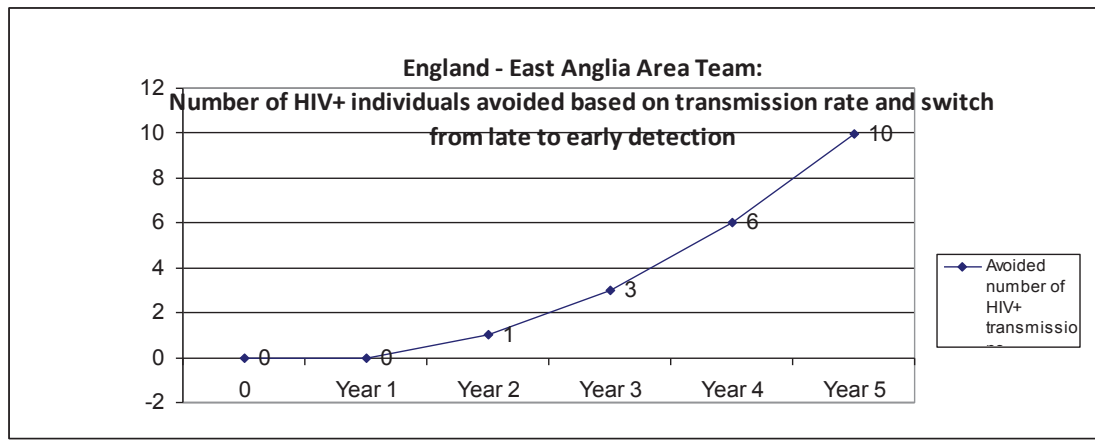
**Fig XXXI. England - East Anglia Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



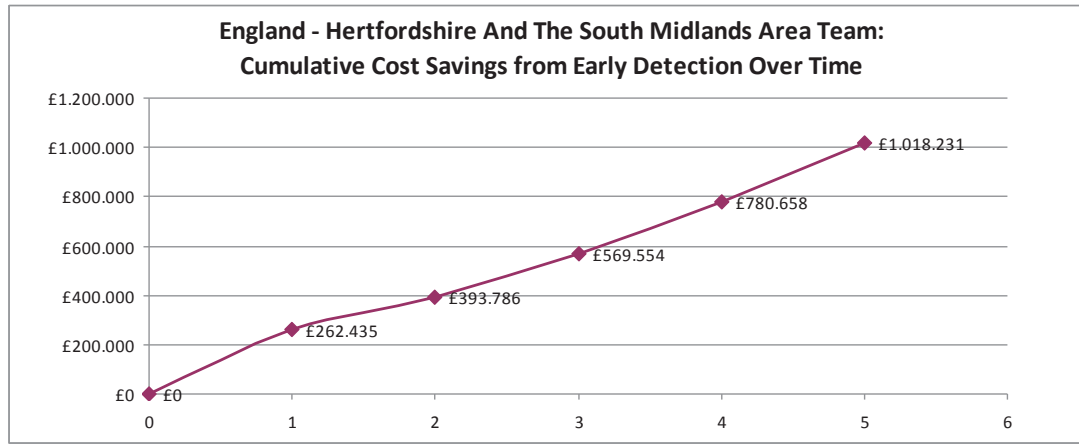
**Fig XXXII. England - East Anglia Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



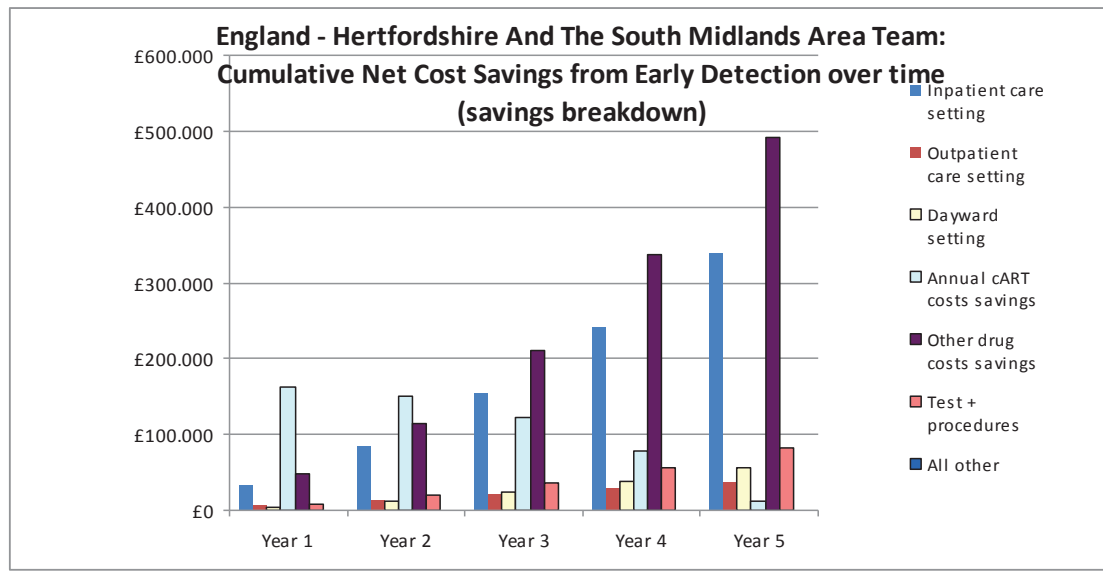
**Fig XXXIII. England - East Anglia Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



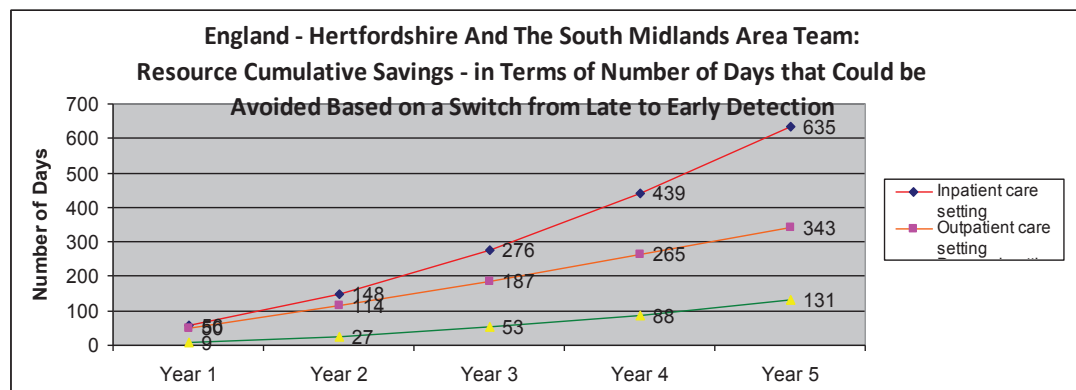
**Fig XXXIV. England - Hertfordshire And The South Midlands Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



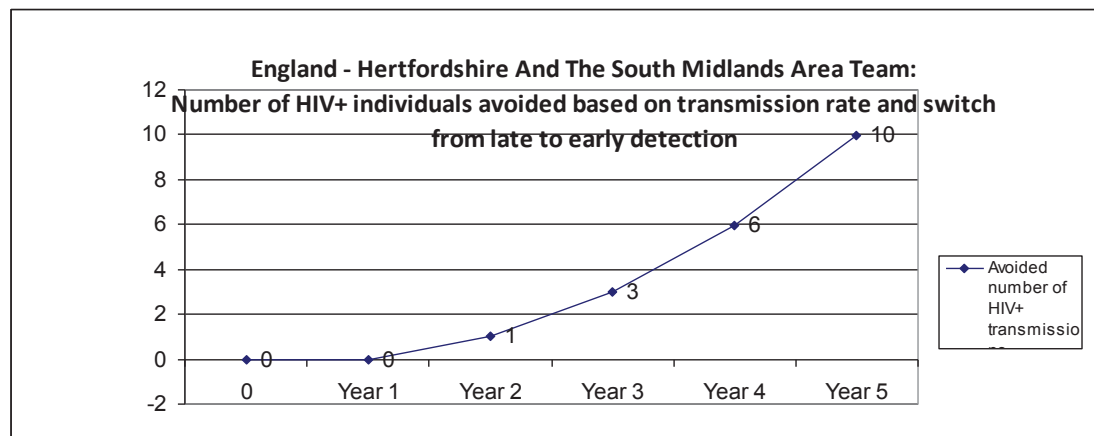
**Fig XXXV. England - Hertfordshire And The South Midlands Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



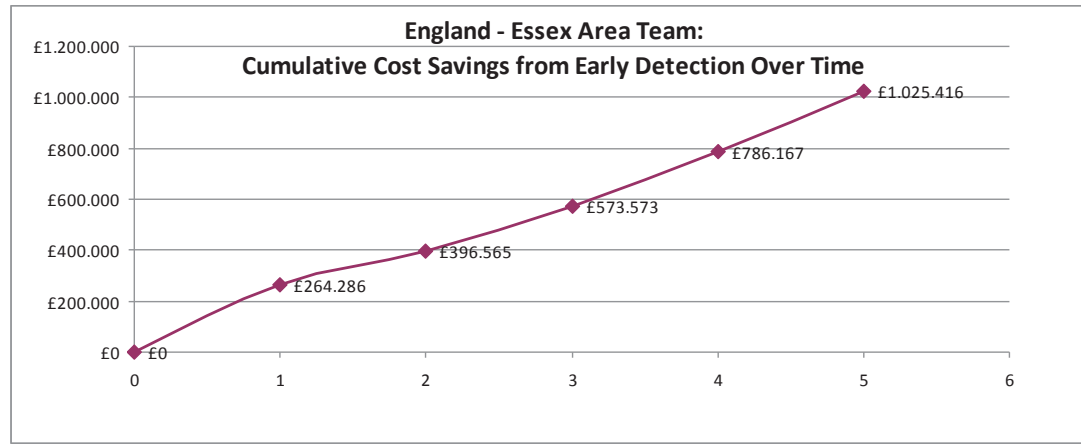
**Fig XXXVI. England - Hertfordshire And The South Midlands Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



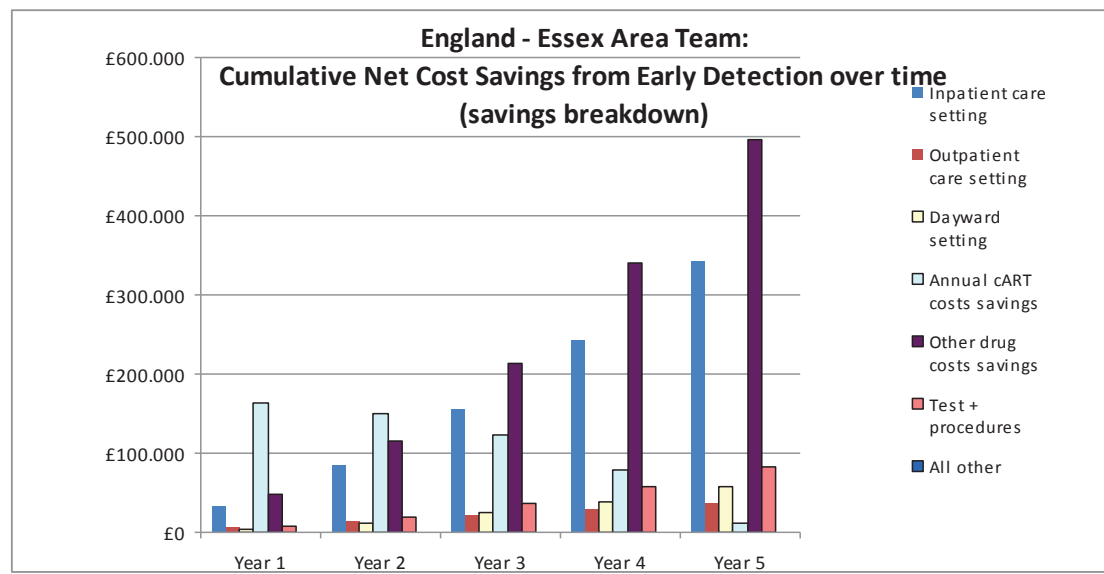
**Fig XXXVII. England - Hertfordshire And The South Midlands Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig XXXVIII. England - Essex Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

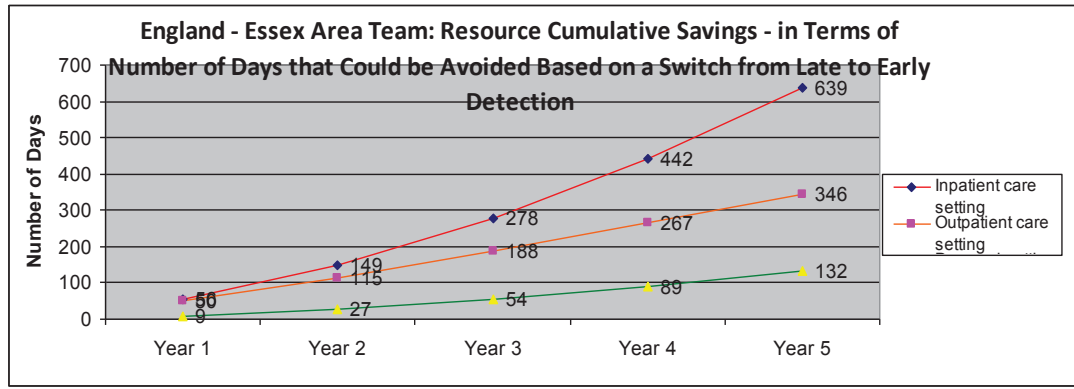


**Fig XXXIX. England - Essex Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

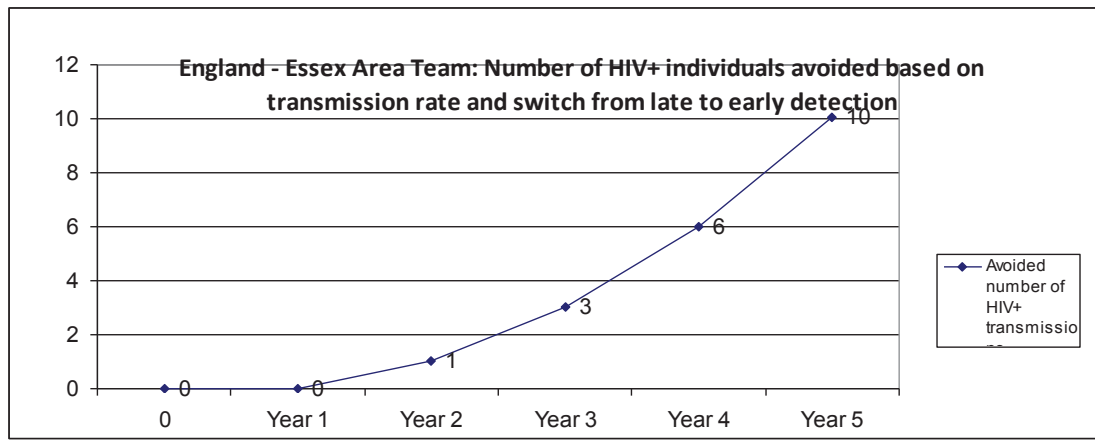




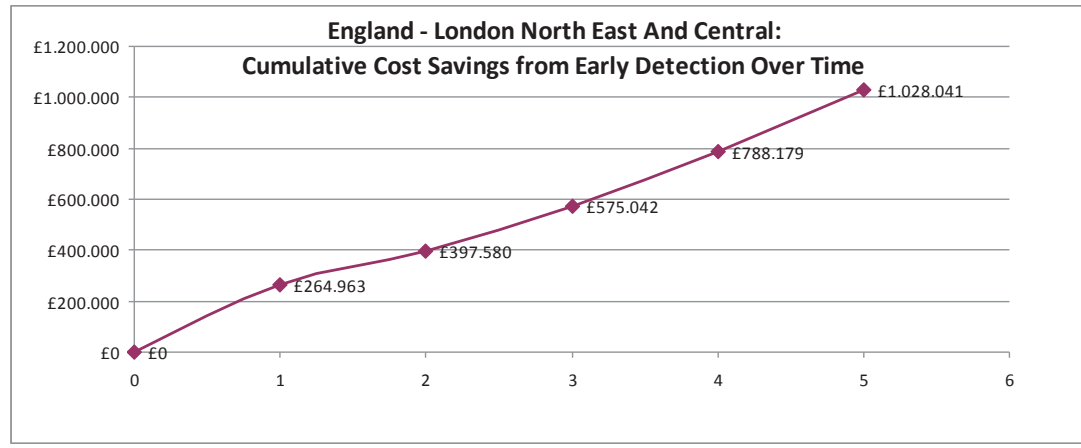
**Fig XL. England - Essex Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



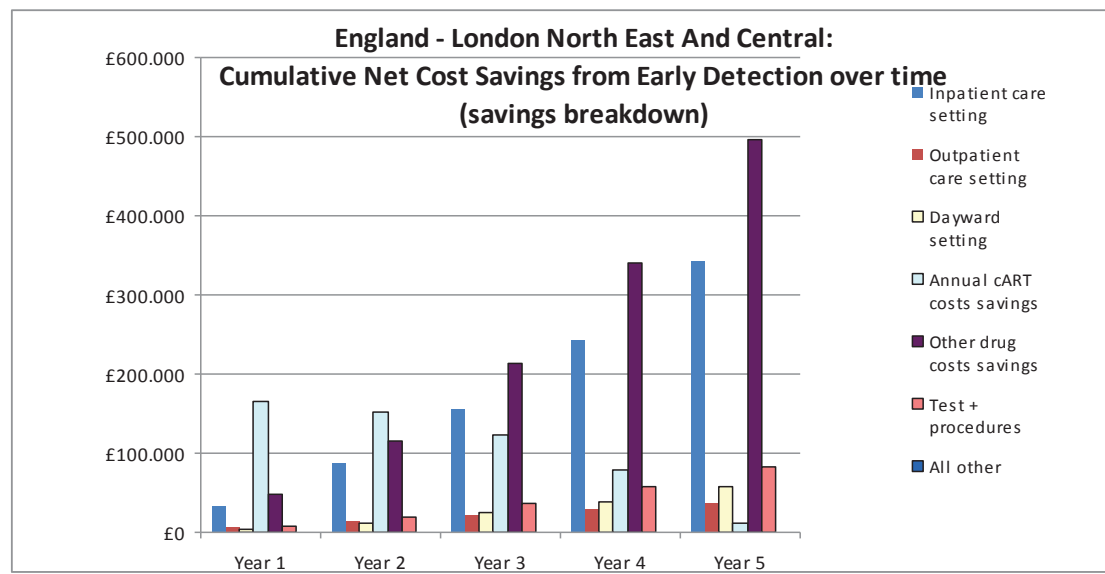
**Fig XLI. England - Essex Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



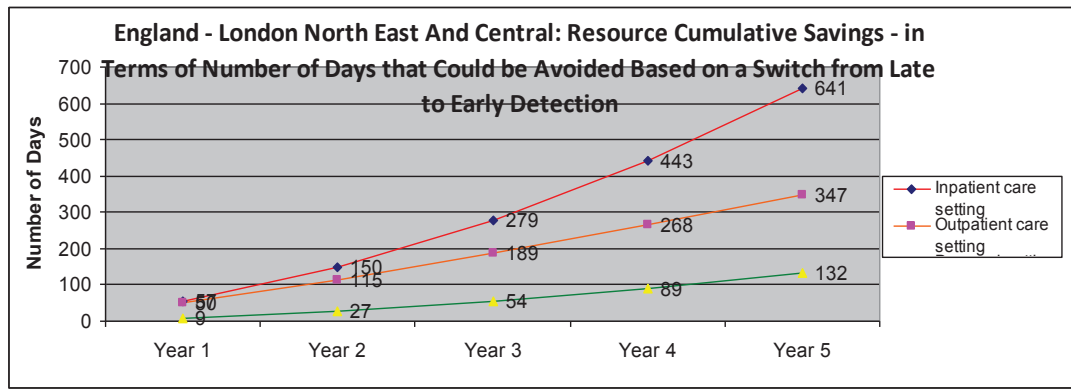
**Fig XLII. England - London North East And Central: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



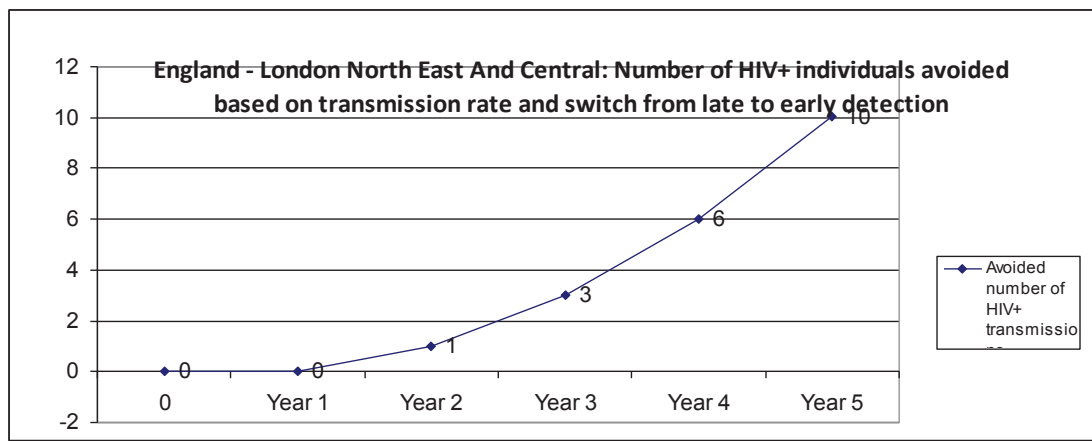
**Fig XLIII. England - London North East And Central: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



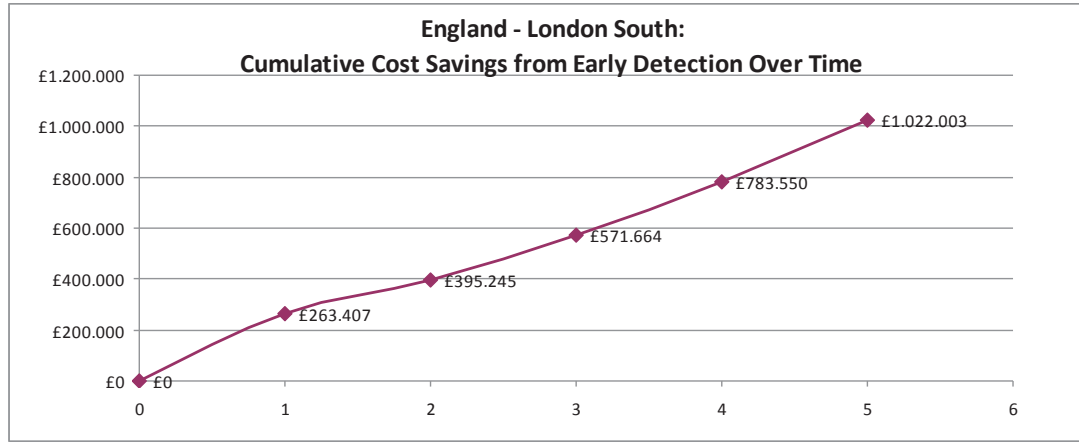
**Fig XLIV. England - London North East And Central: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



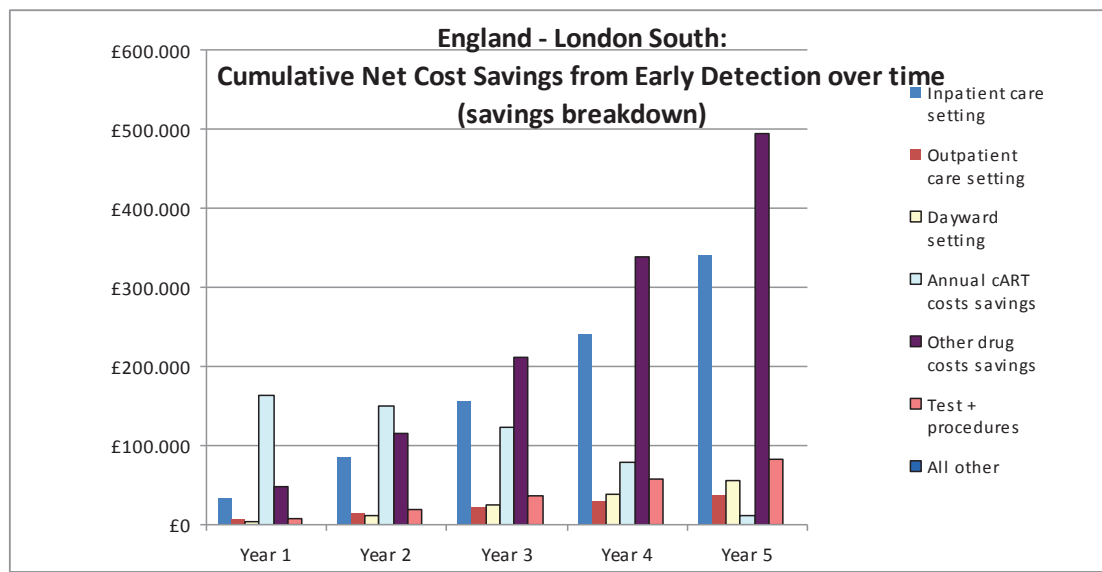
**Fig XLV. England - London North East And Central: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



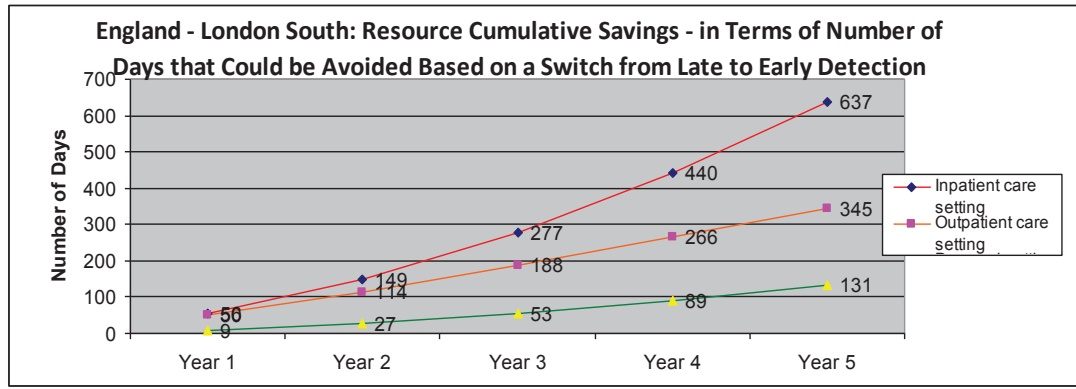
**Fig XLVI. England - London South: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



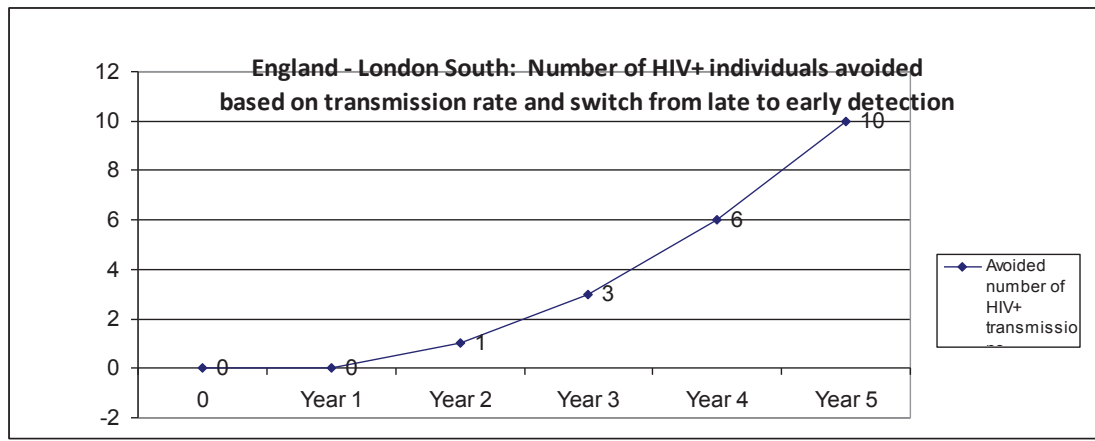
**Fig XLVII. England - London South: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



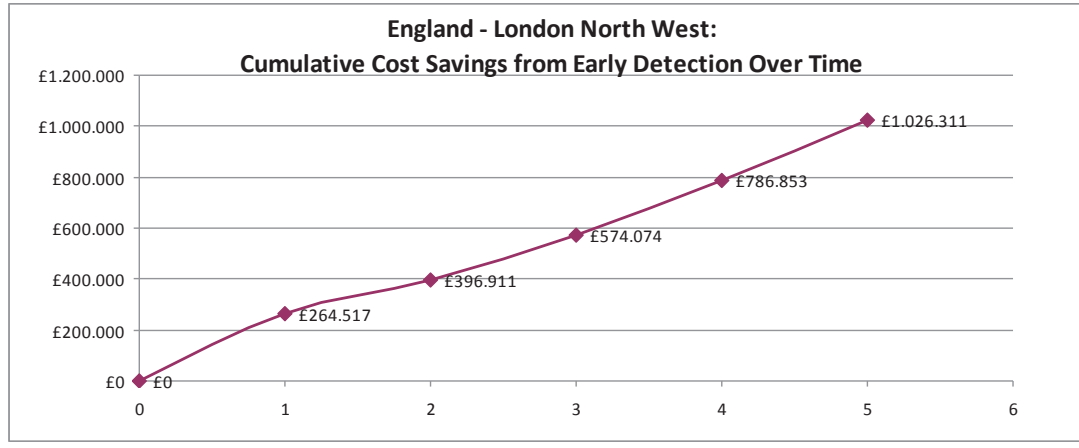
**Fig XLVIII. England -London South: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



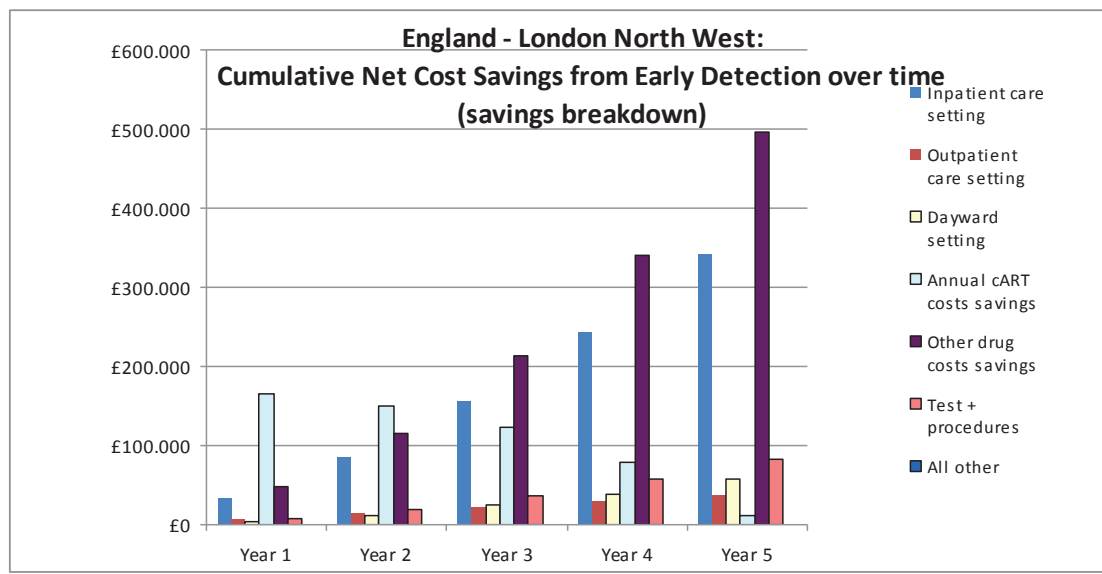
**Fig XLIX. England - London South: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



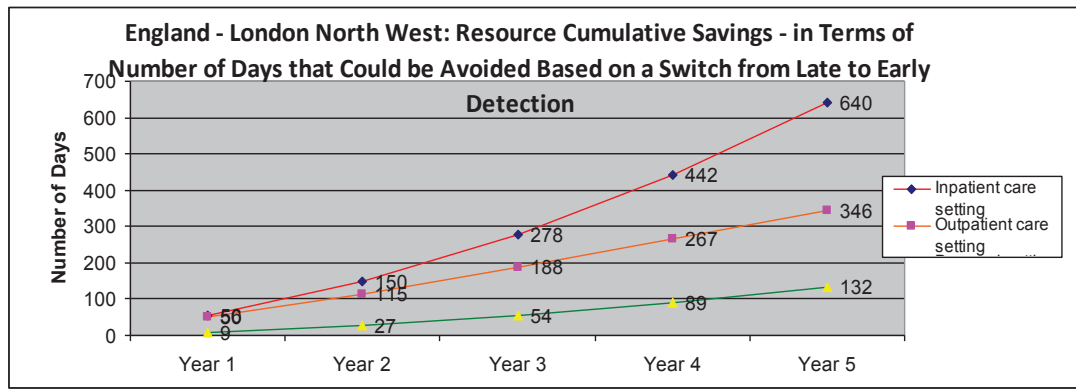
**Fig L. England - London North West: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



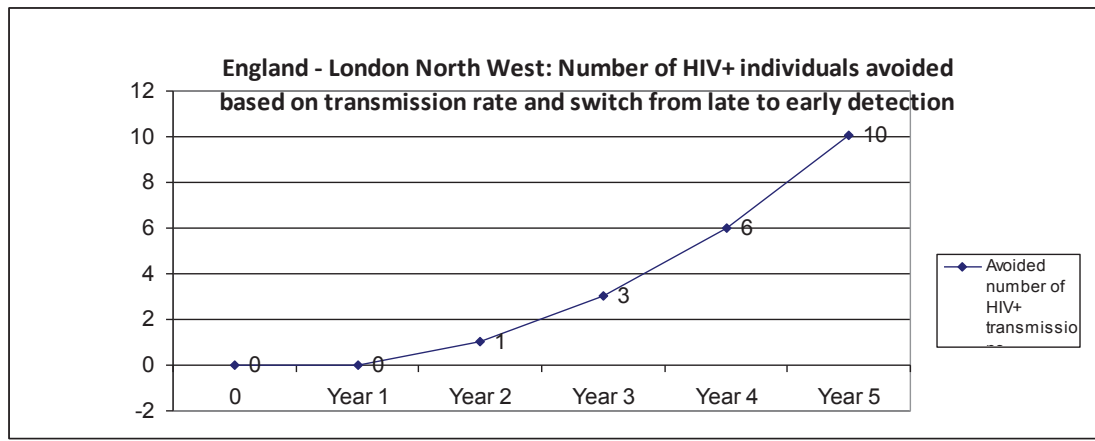
**Fig LI. England - London North West: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



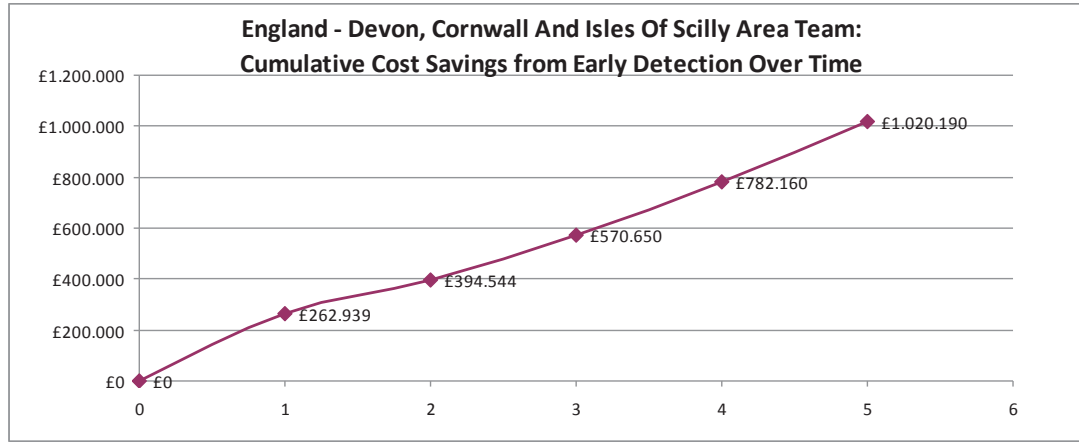
**Fig LII. England - London North West: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



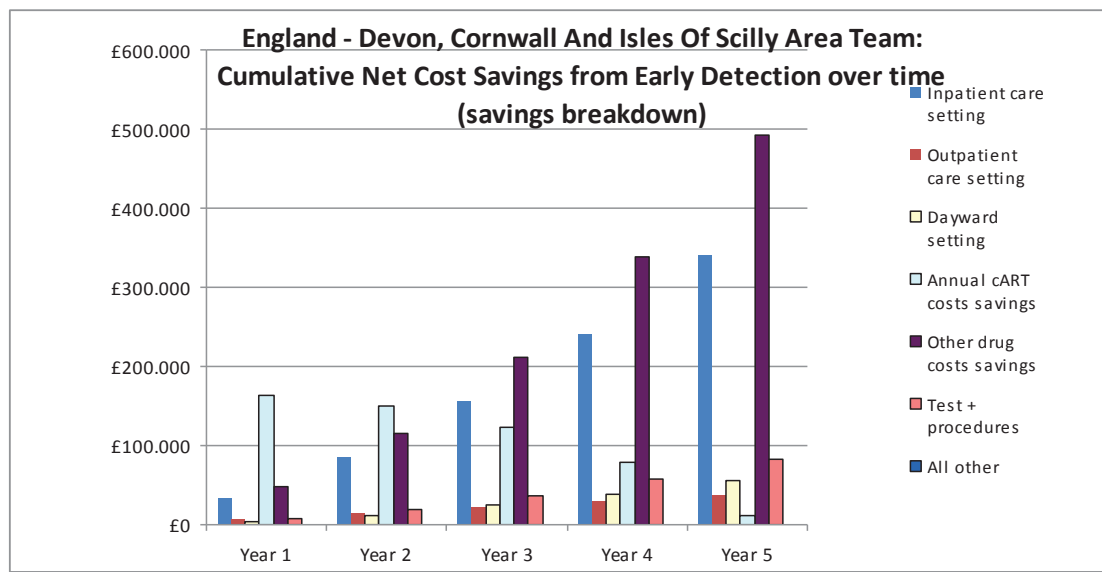
**Fig LIII. England - London North West: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig LIV. England - Devon, Cornwall And Isles Of Scilly Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

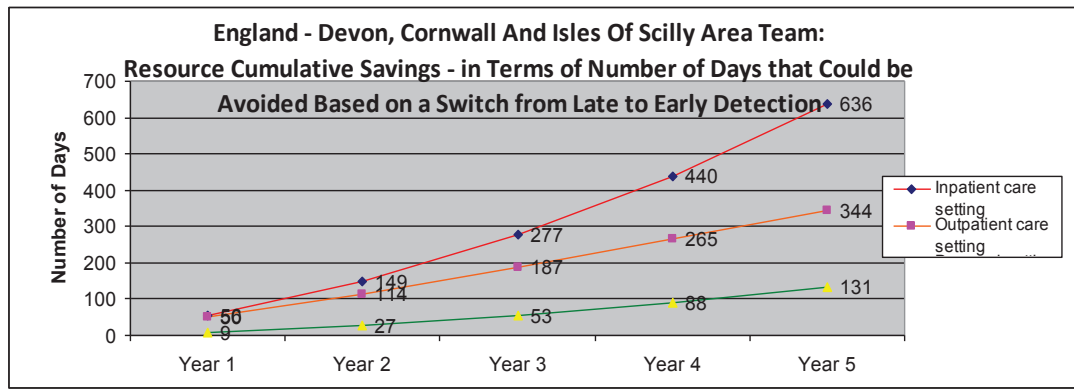


**Fig LV. England - Devon, Cornwall And Isles Of Scilly Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

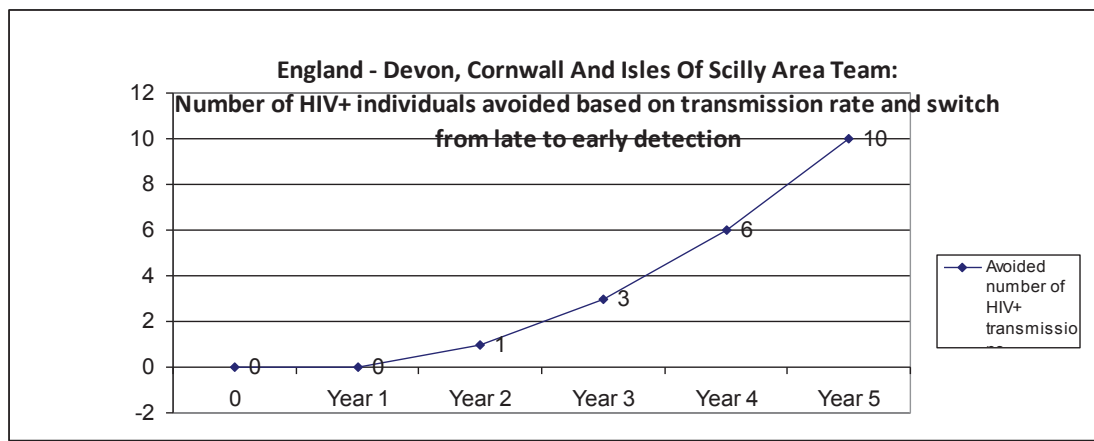




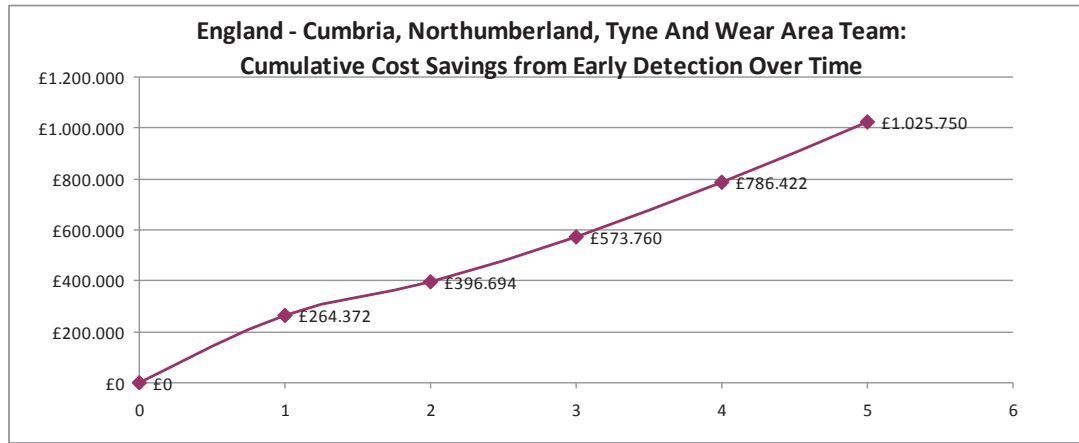
**Fig LVI England - Devon, Cornwall And Isles Of Scilly Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



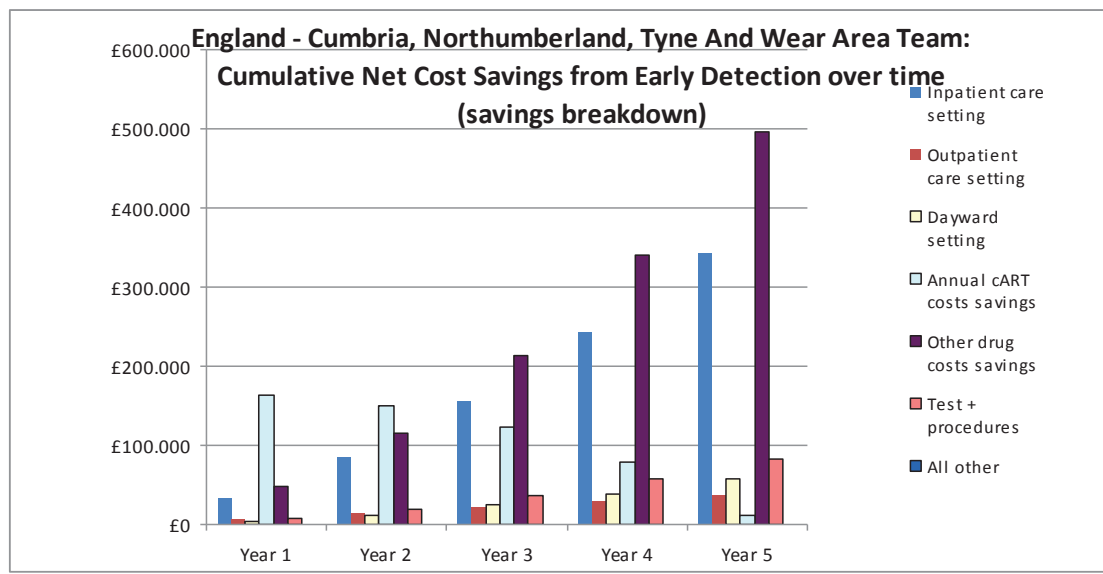
**Fig LVII. England - Devon, Cornwall And Isles Of Scilly Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



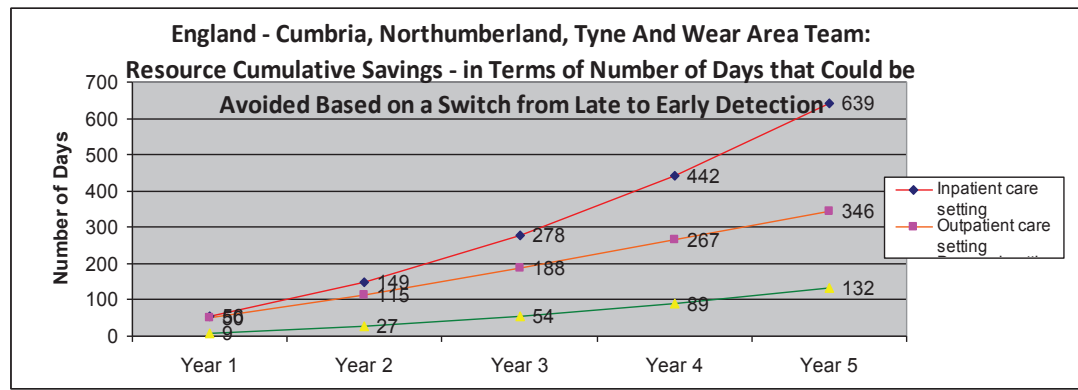
**Fig LVIII. England - Cumbria, Northumberland, Tyne And Wear Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



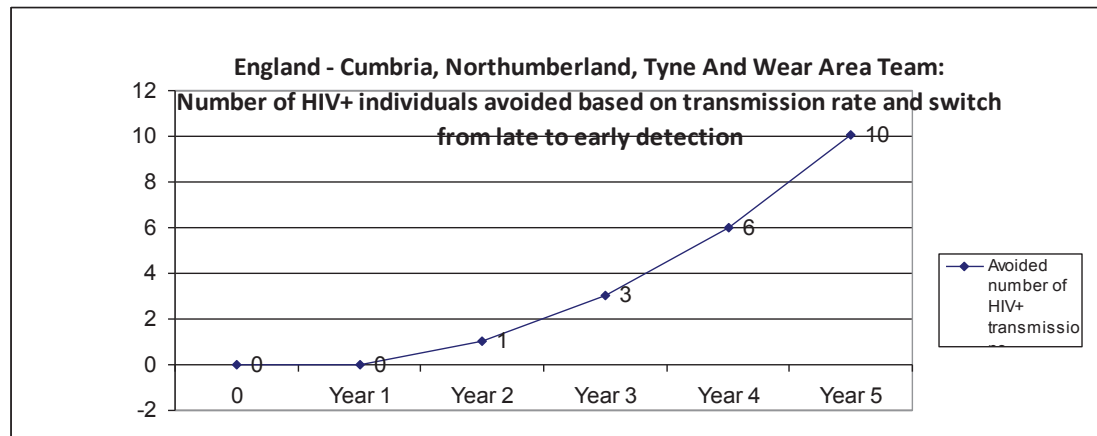
**Fig LIX. England - Cumbria, Northumberland, Tyne And Wear Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



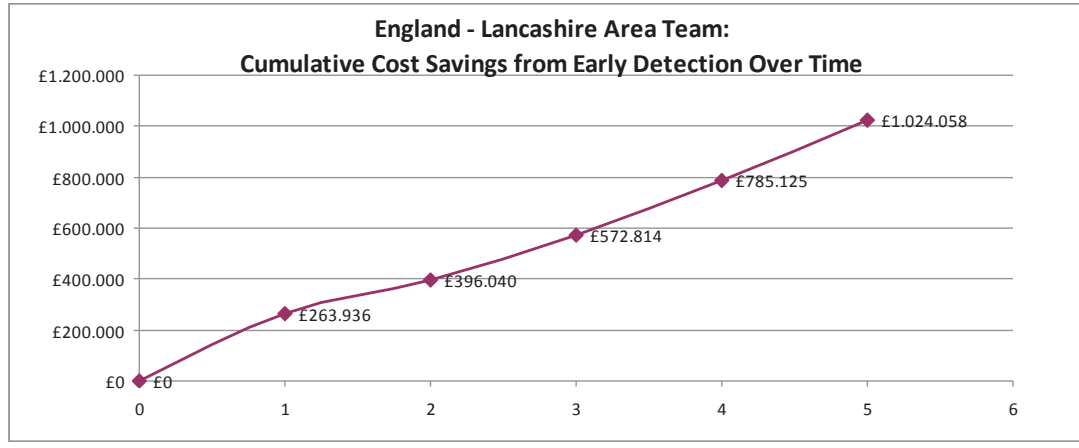
**Fig LX. England, Cumbria, Northumberland, Tyne And Wear Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



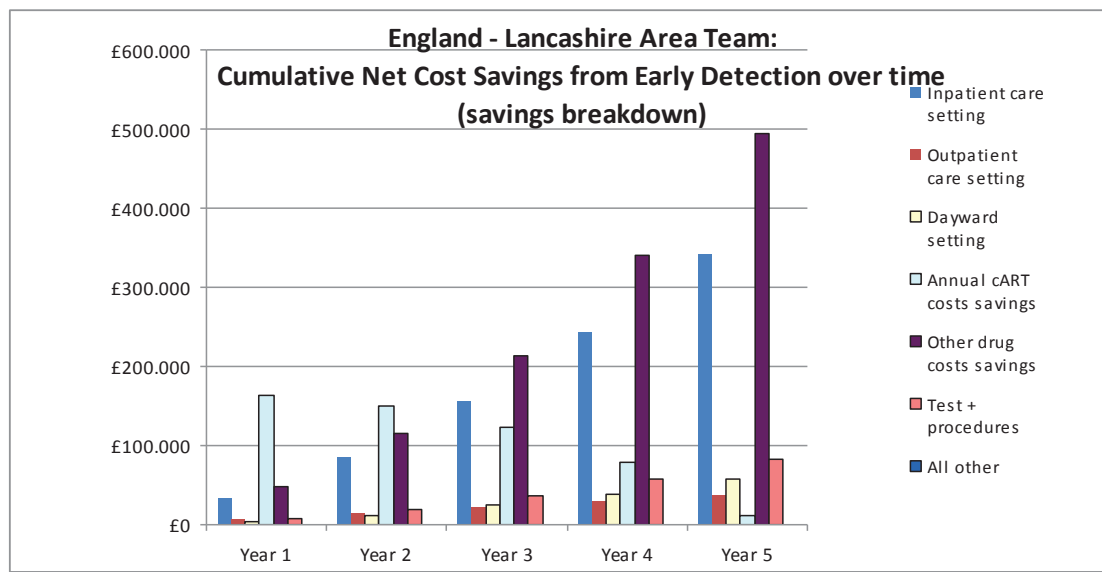
**Fig LXI. England, Cumbria, Northumberland, Tyne And Wear Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



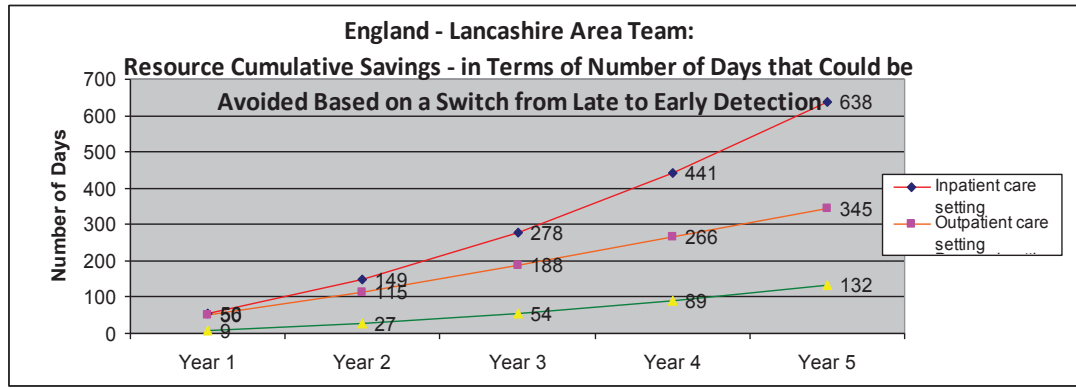
**Fig LXII. England - Lancashire Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



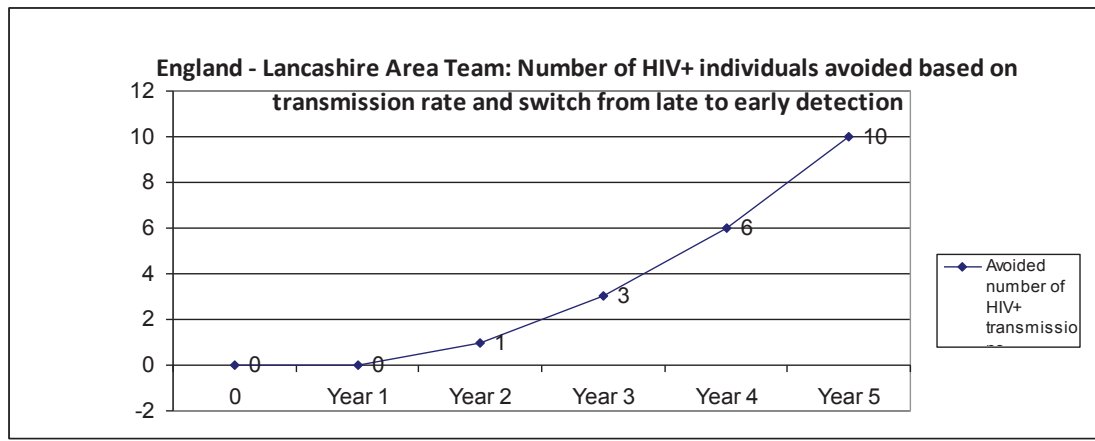
**Fig LXIII. England - Lancashire Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



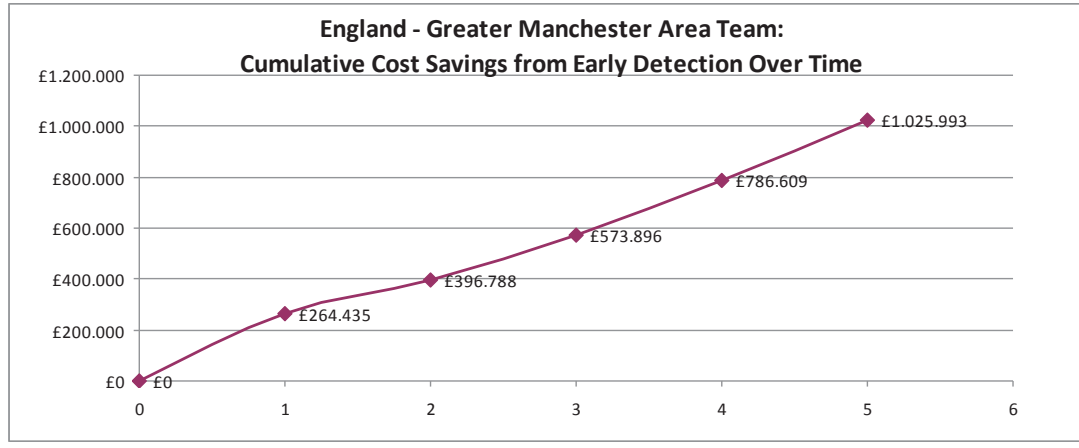
**Fig LXIV. England - Lancashire Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



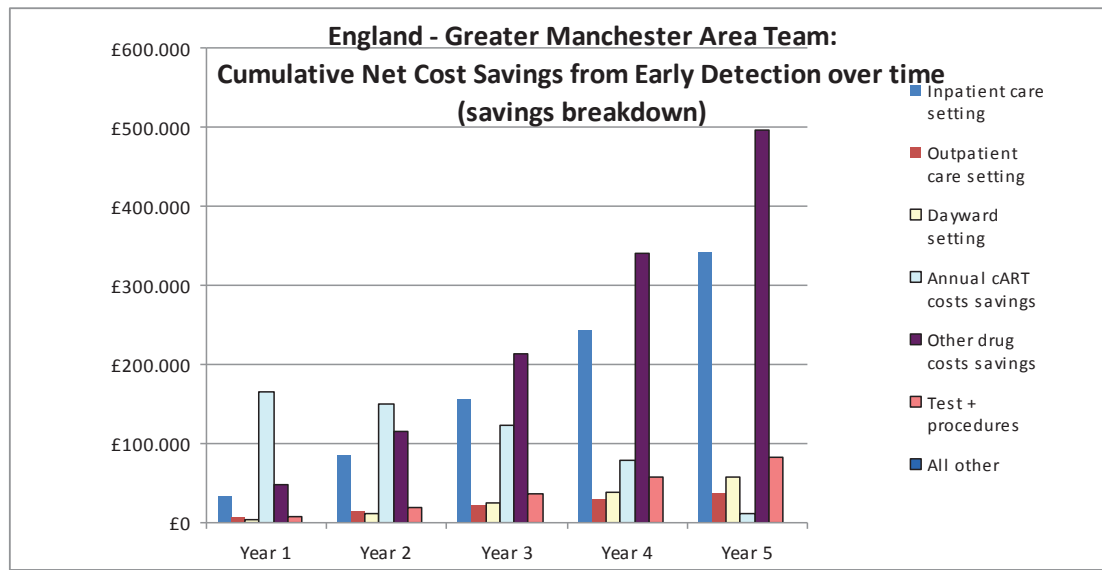
**Fig LXV. England - Lancashire Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



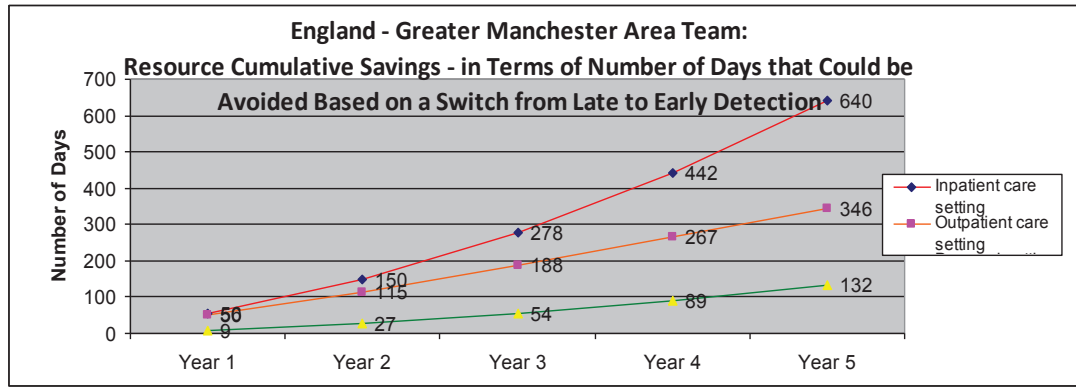
**Fig LXVI. England - Greater Manchester Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



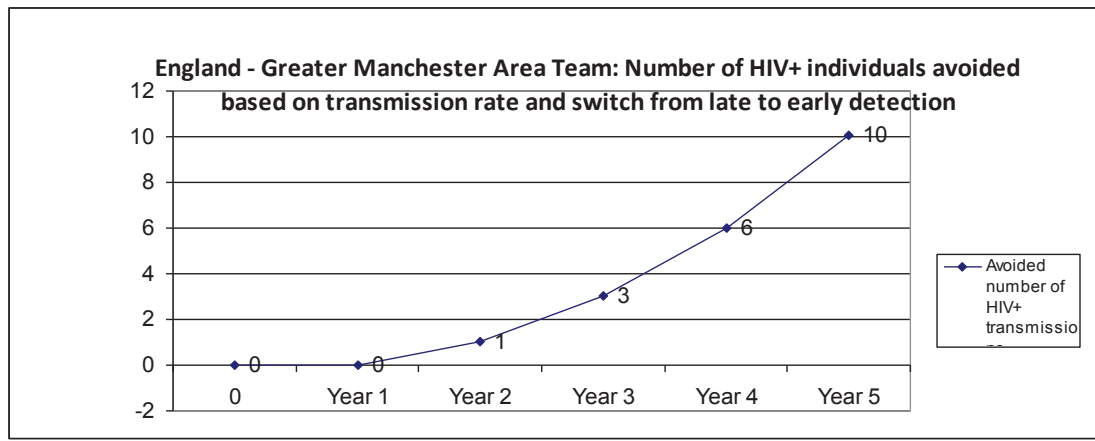
**Fig LXVII. England - Greater Manchester Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



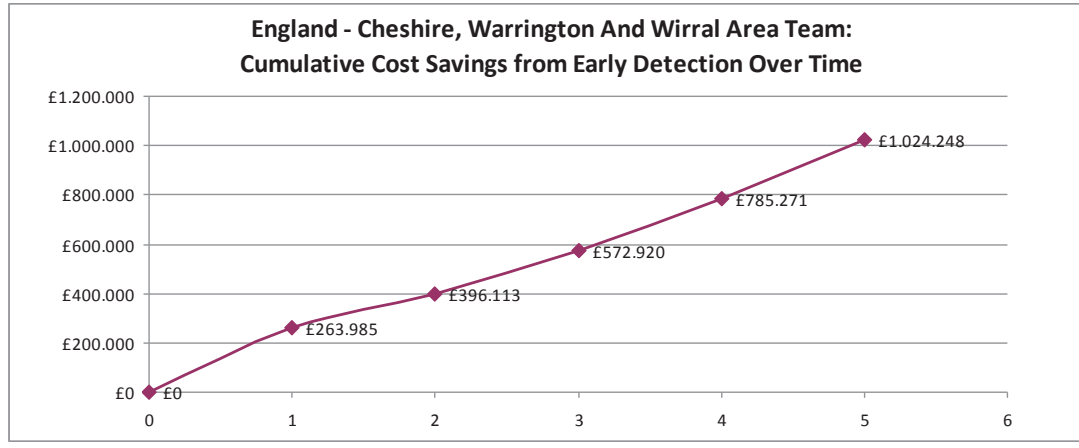
**Fig LXVIII. England - Greater Manchester Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



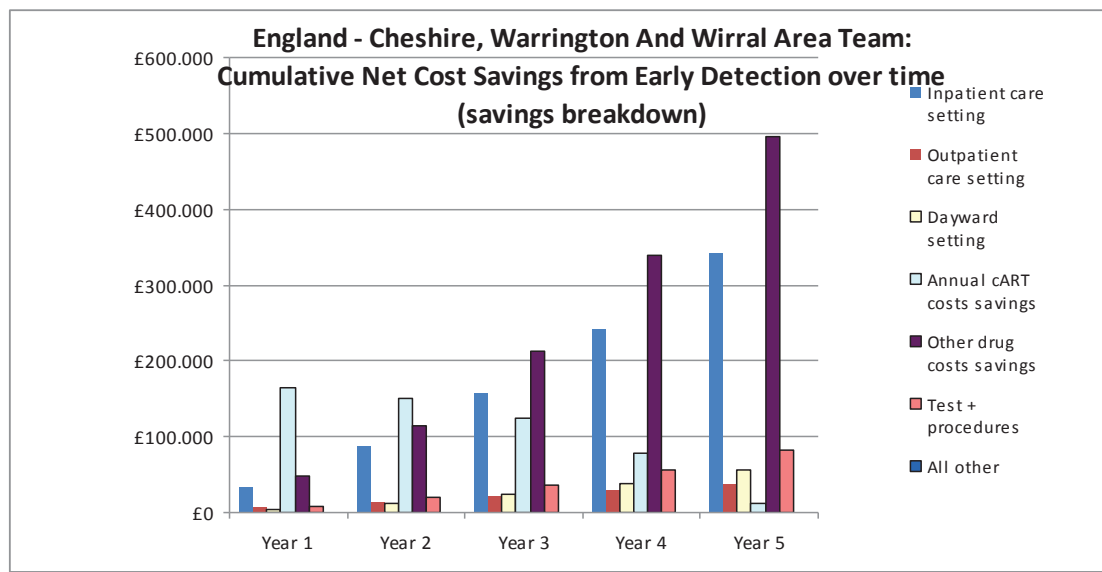
**Fig LXIX. England - Greater Manchester Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig LXX. England - Cheshire, Warrington And Wirral Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

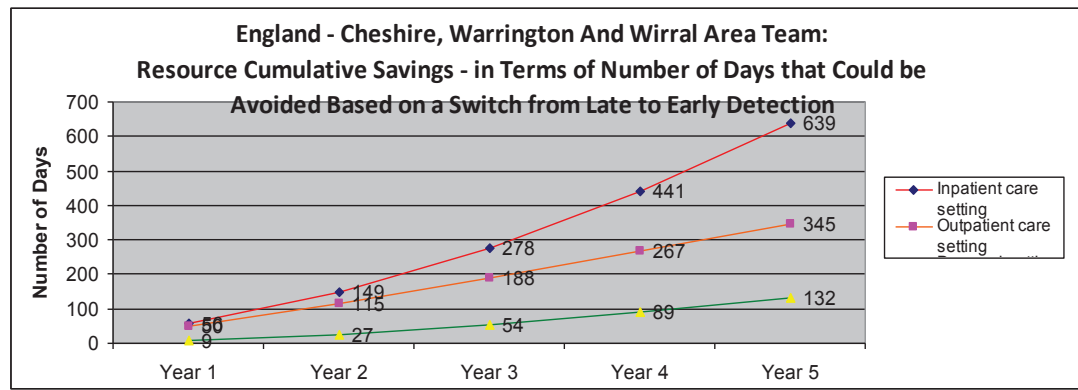


**Fig LXXI. England - Cheshire, Warrington And Wirral Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

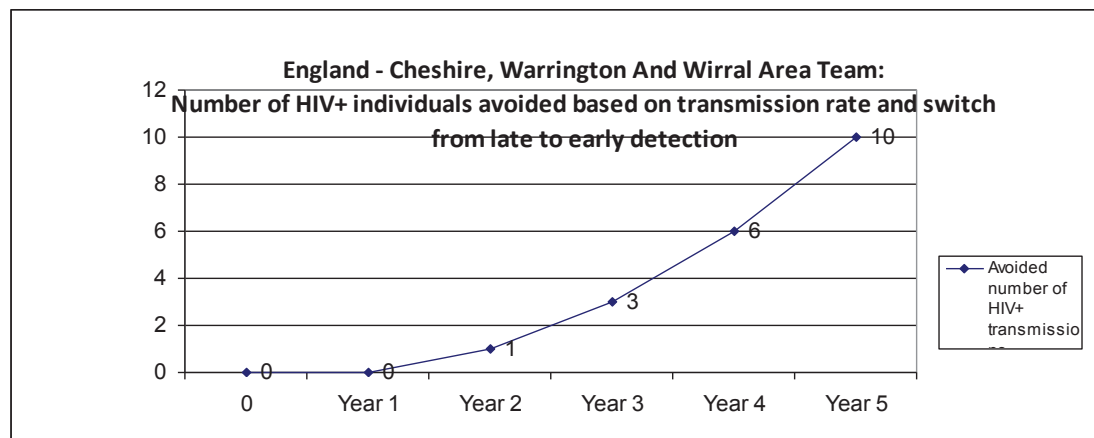




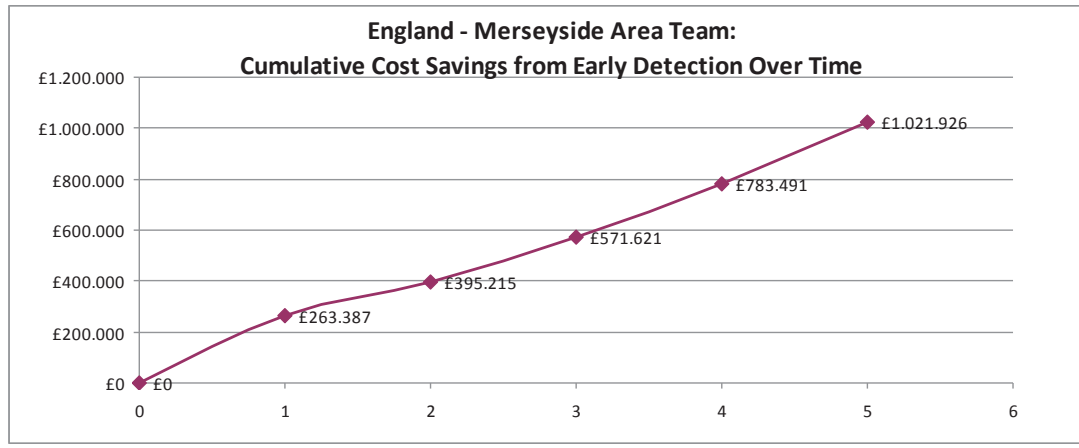
**Fig LXXII. England - Cheshire, Warrington And Wirral Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



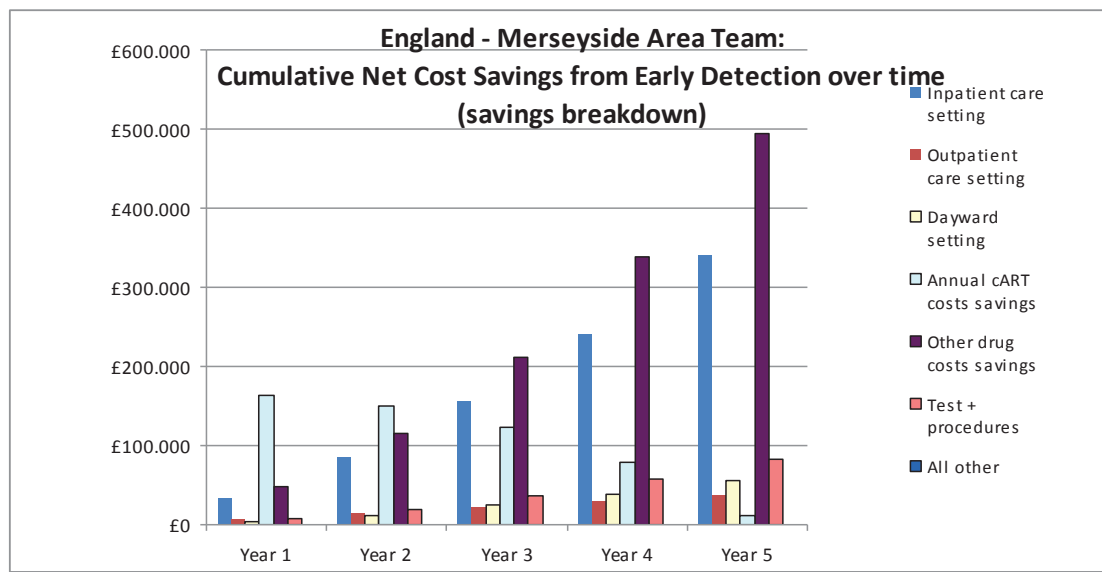
**Fig LXXIII. England - Cheshire, Warrington And Wirral Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



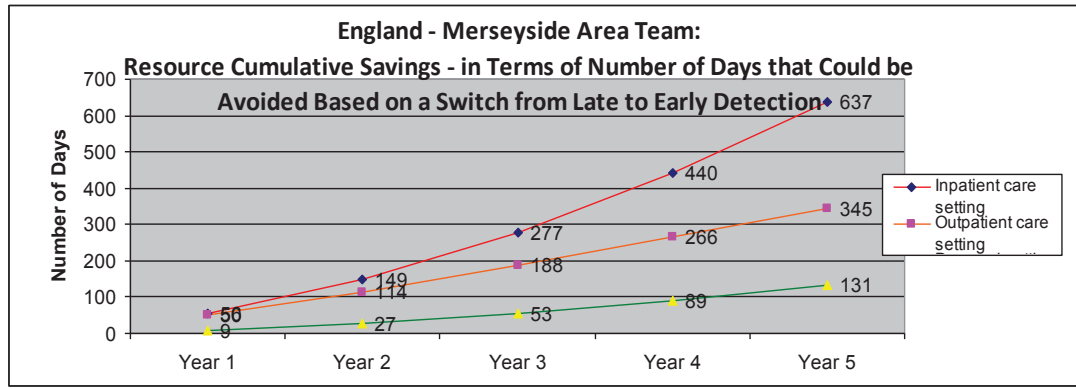
**Fig LXXIV. England - Merseyside Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



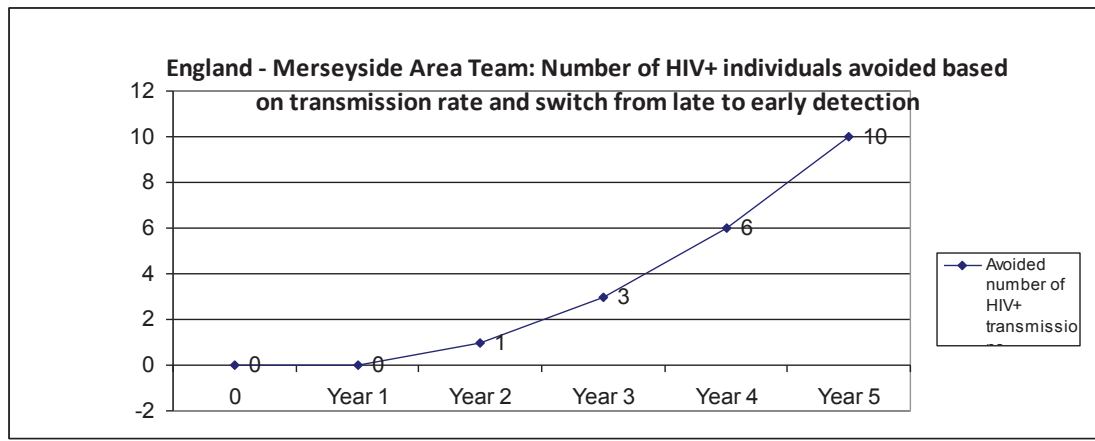
**Fig LXXV. England - Merseyside Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



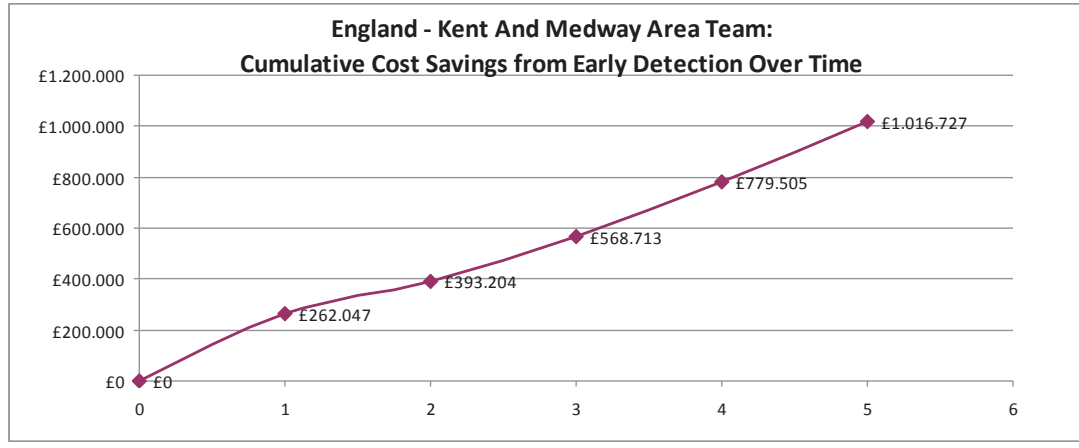
**Fig LXXVI. England - Merseyside Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



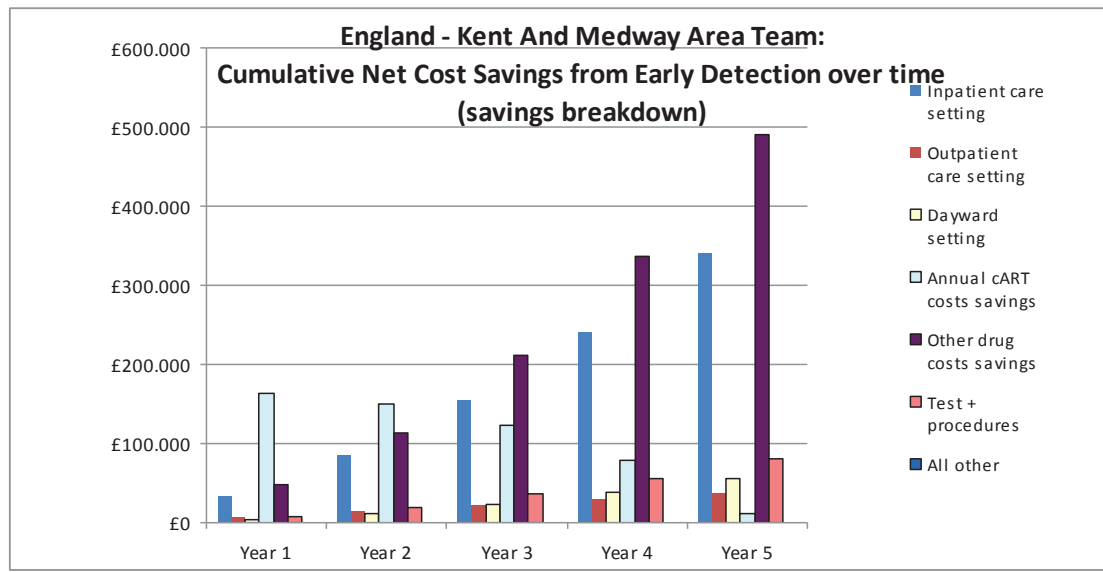
**Fig LXXVII. England - Merseyside Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



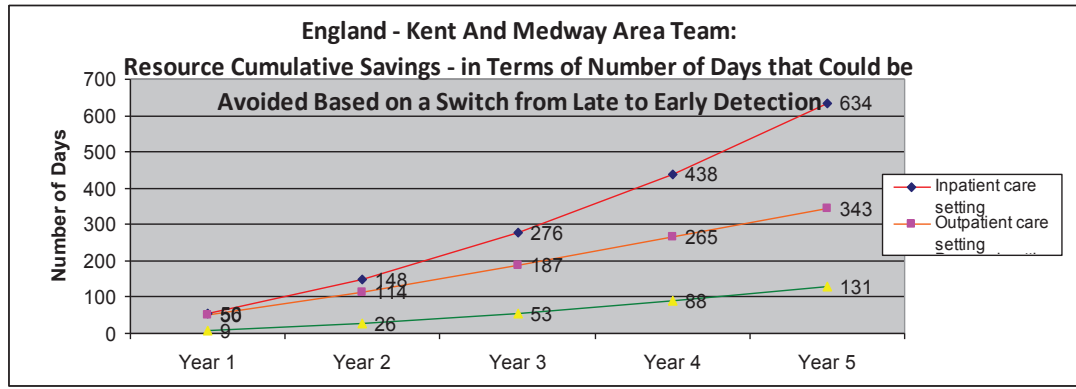
**Fig LXXVIII. England - Kent And Medway Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



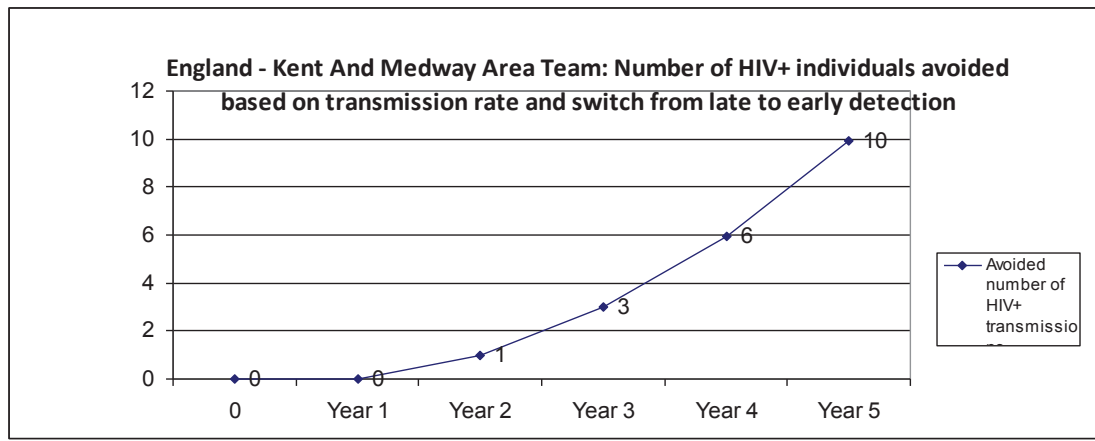
**Fig LXXIX. England - Kent And Medway Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



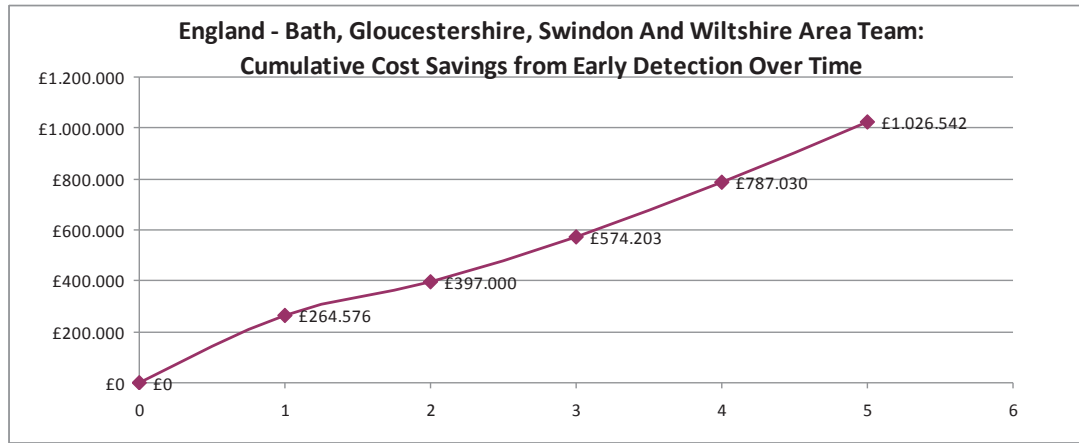
**Fig LXXX. England - Kent And Medway Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



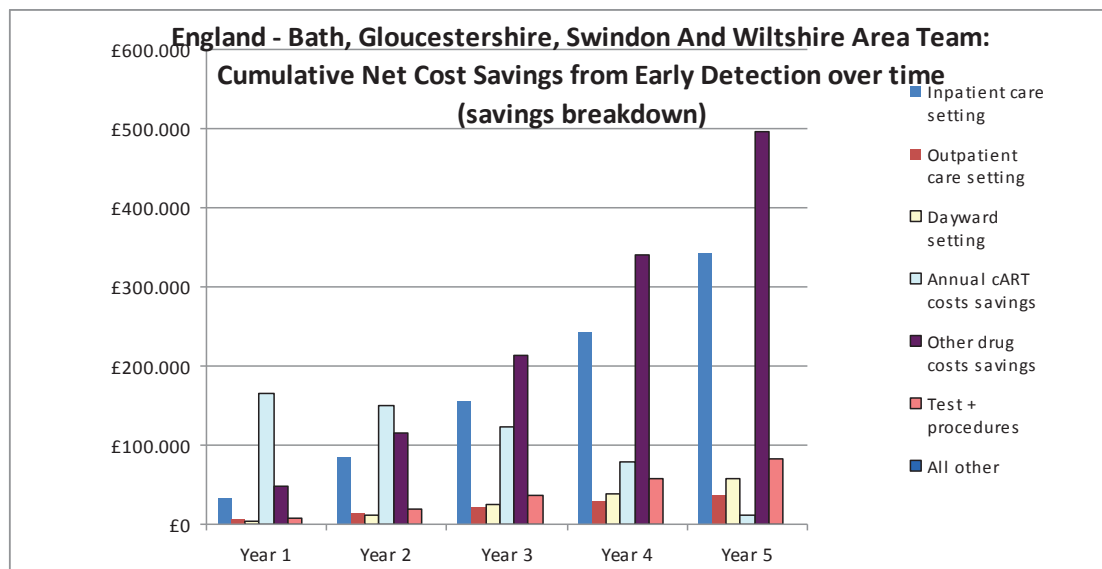
**Fig LXXXI. England - Kent And Medway Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



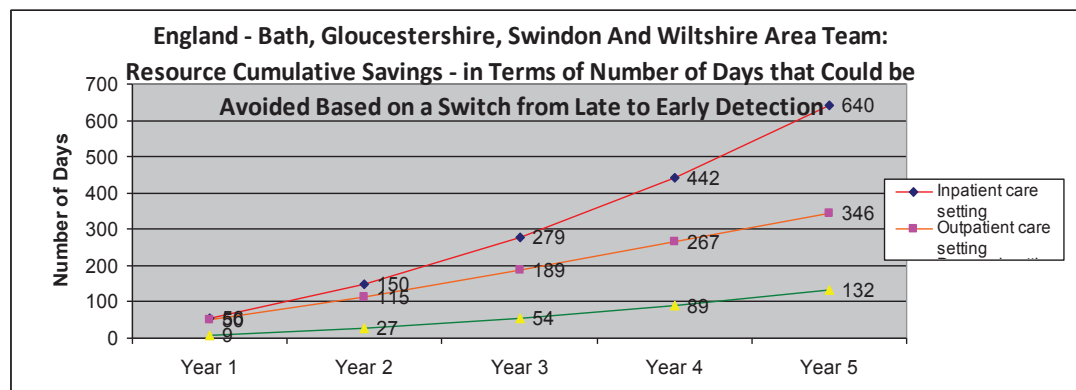
**Fig LXXXII. England - Bath, Gloucestershire, Swindon And Wiltshire Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



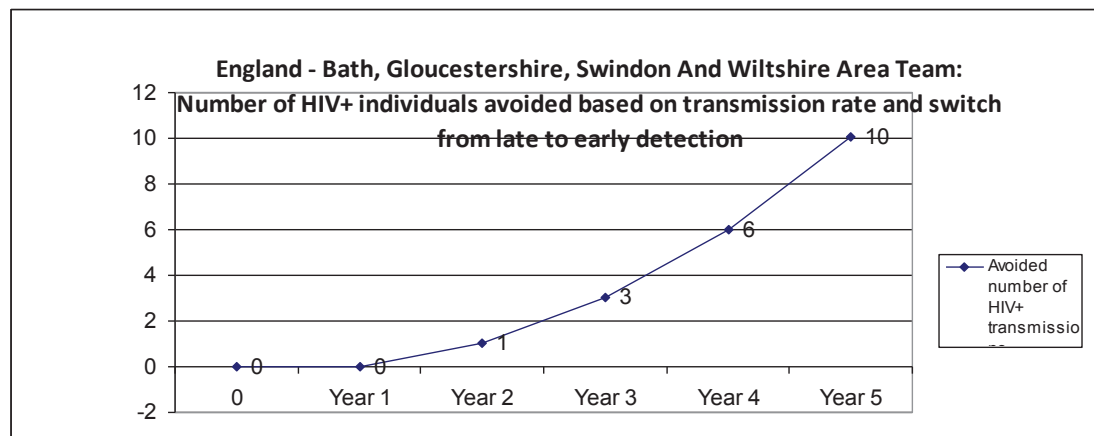
**Fig LXXXIII. England - Bath, Gloucestershire, Swindon And Wiltshire Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



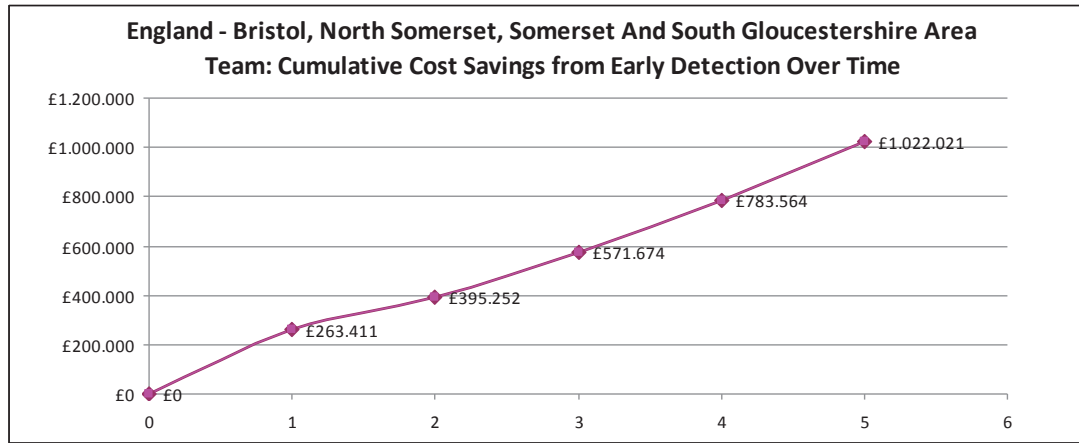
**Fig LXXXIV. England - Bath, Gloucestershire, Swindon And Wiltshire Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



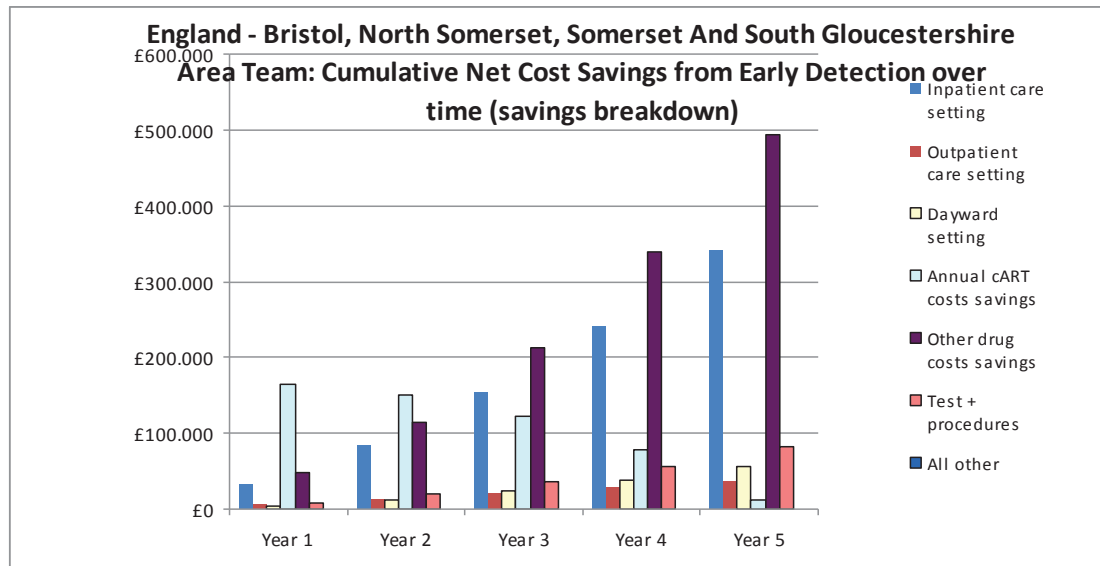
**Fig LXXXV. England - Bath, Gloucestershire, Swindon And Wiltshire Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig LXXXVI. England - Bristol, North Somerset, Somerset And South Gloucestershire Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

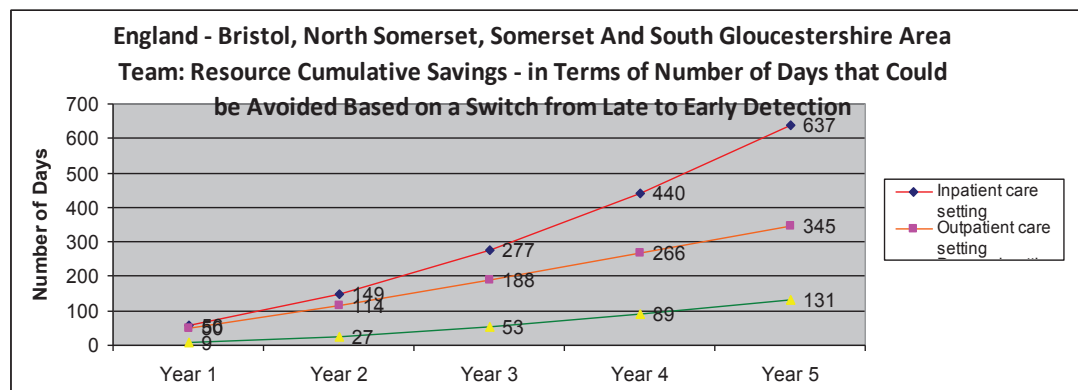


**Fig LXXXVII. England - Bristol, North Somerset, Somerset And South Gloucestershire Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

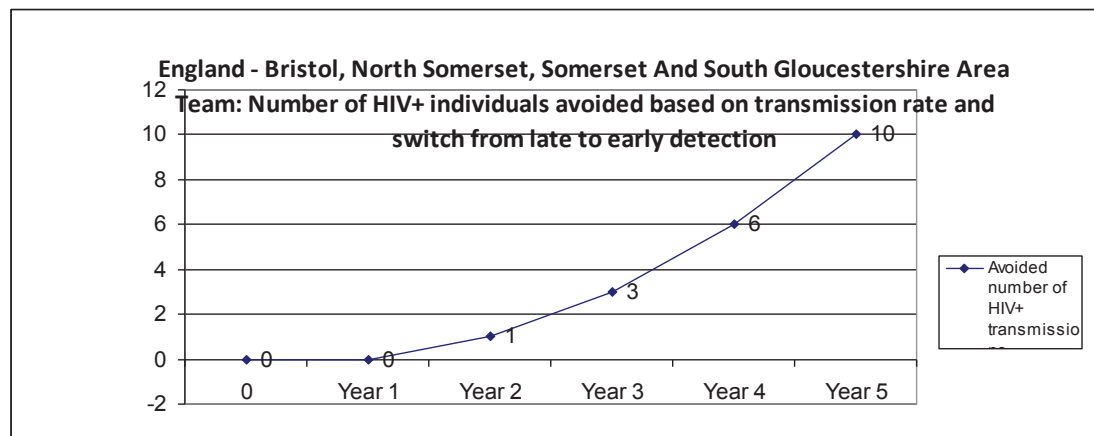




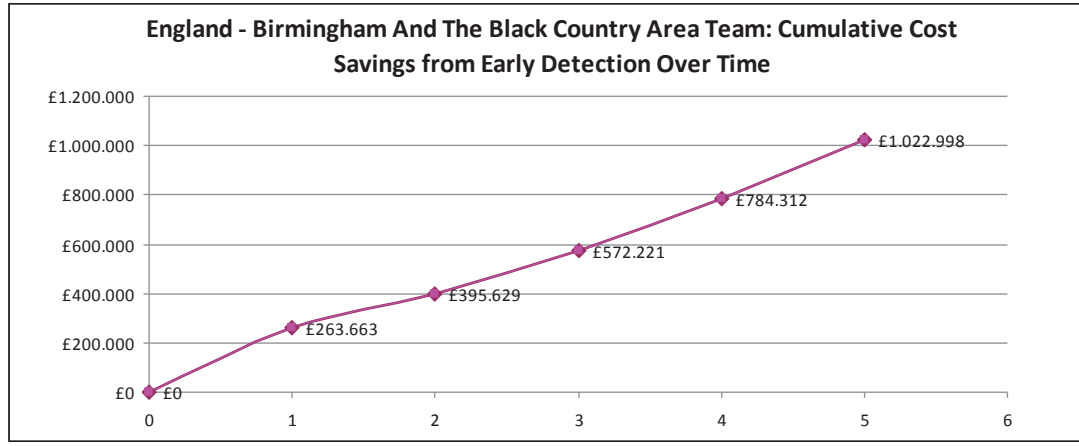
**Fig LXXXVIII. England - Bristol, North Somerset, Somerset And South Gloucestershire Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



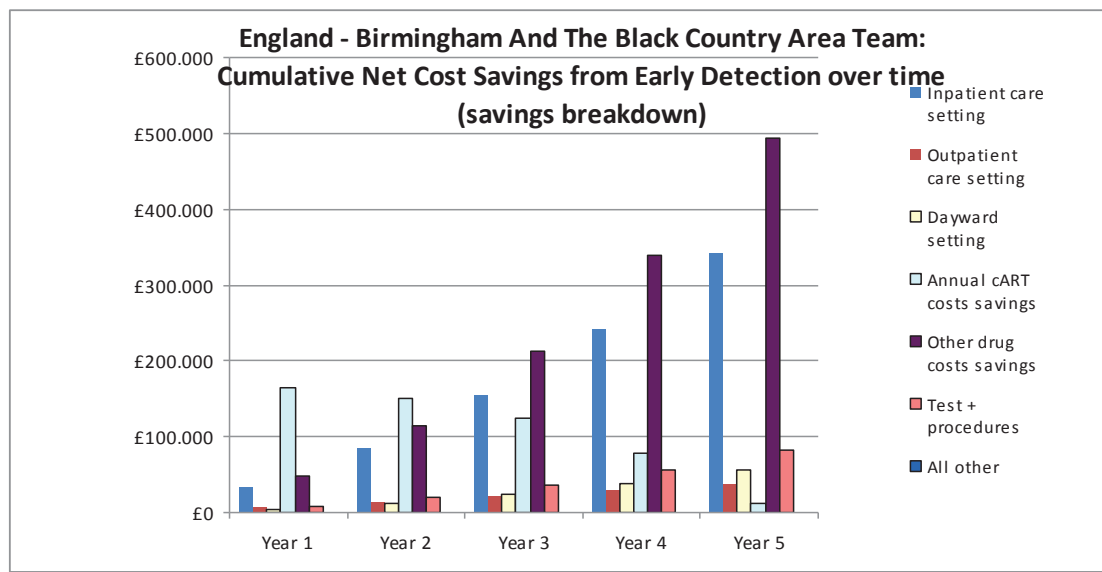
**Fig LXXXIX. England - Bristol, North Somerset, Somerset And South Gloucestershire Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



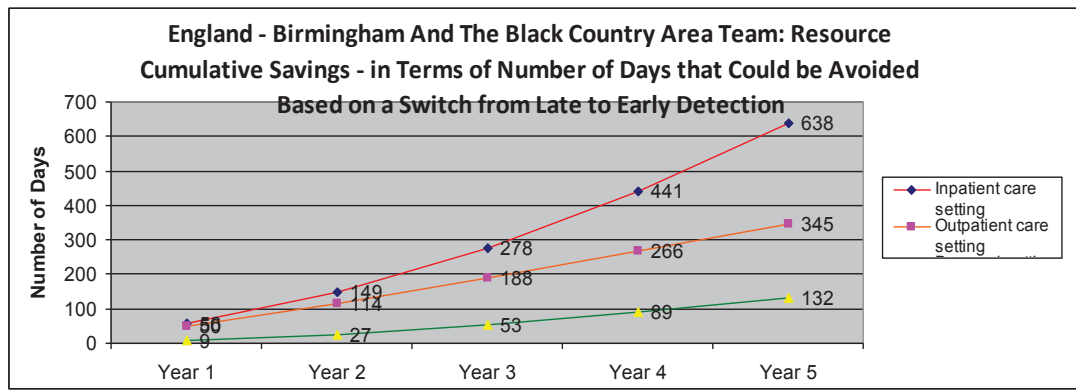
**Fig XC. England - Birmingham And The Black Country Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



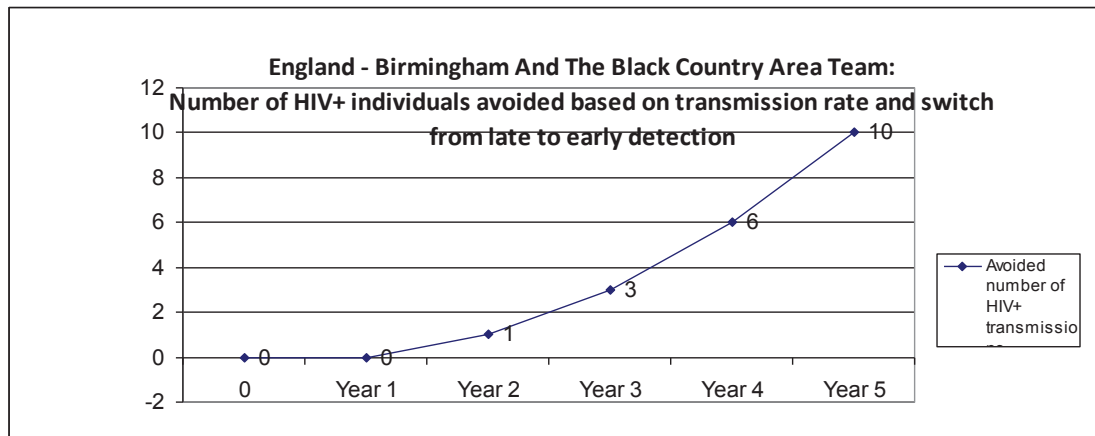
**Fig XCI. England - Birmingham And The Black Country Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



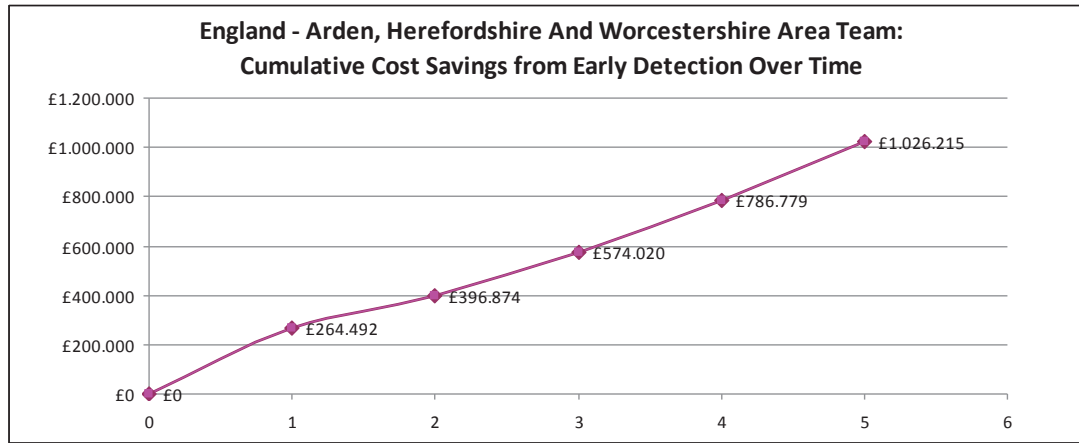
**Fig XCII. England - Birmingham And The Black Country Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



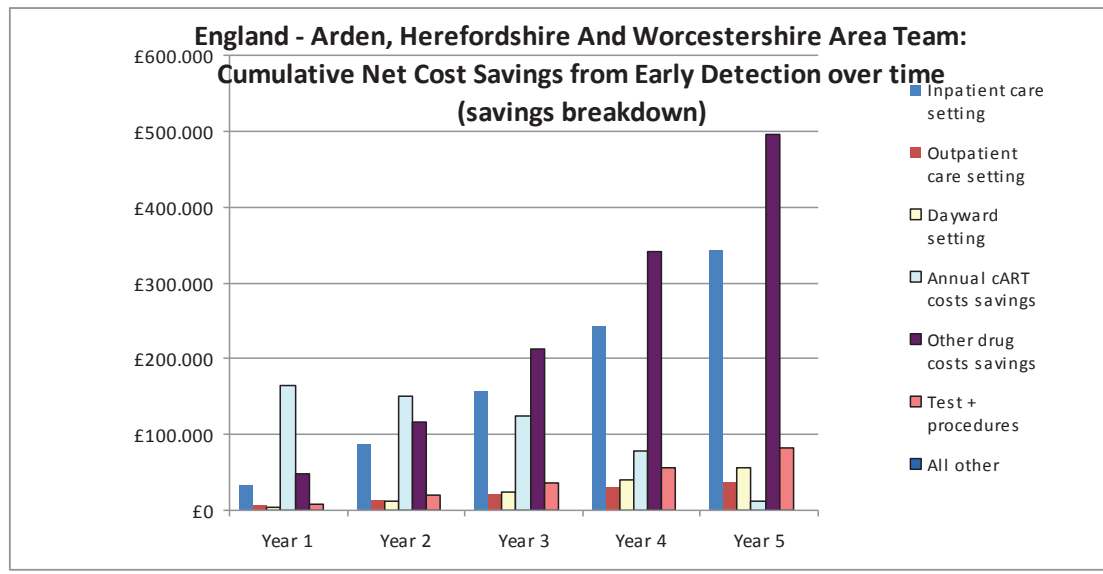
**Fig XCIII. England - Birmingham And The Black Country Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



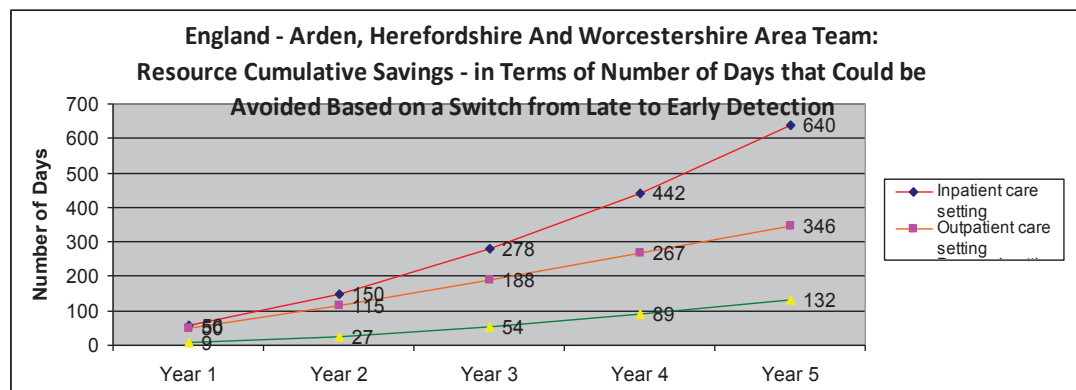
**Fig XCIV. England - Arden, Herefordshire And Worcestershire Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



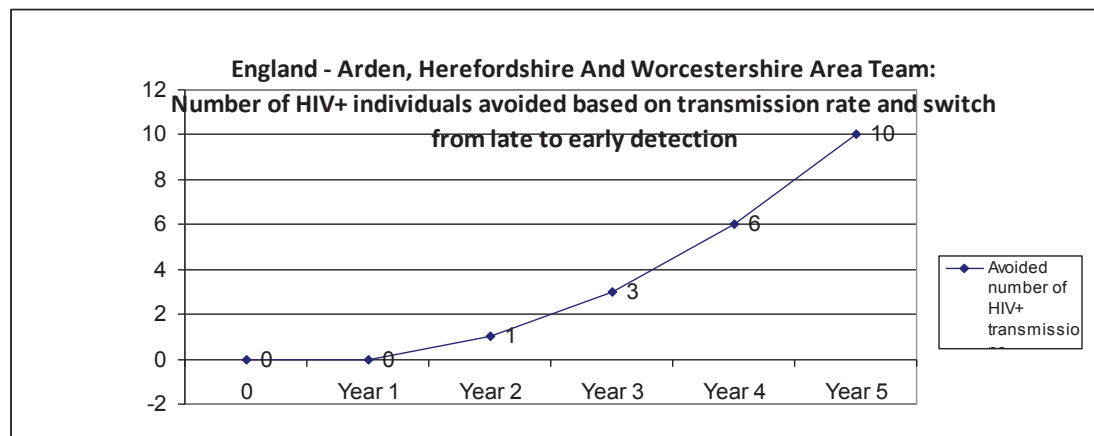
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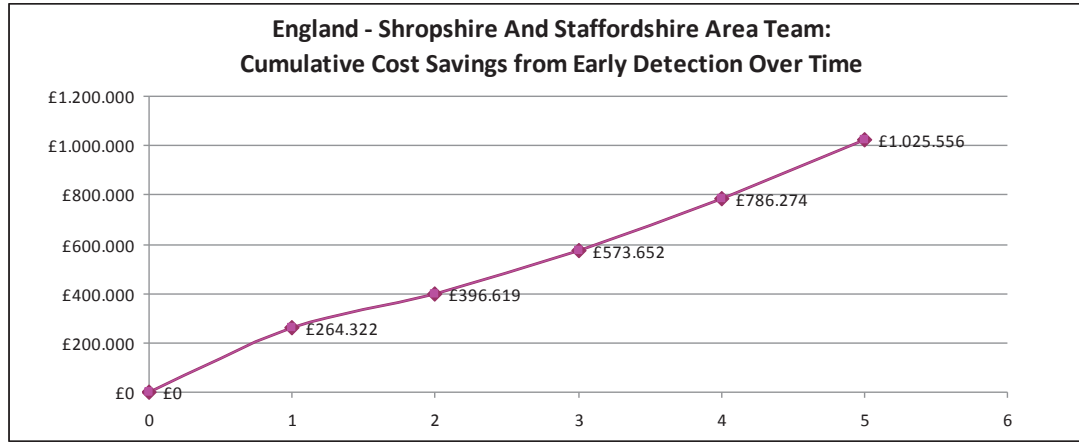
**Fig XCVI. England - Arden, Herefordshire And Worcestershire Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



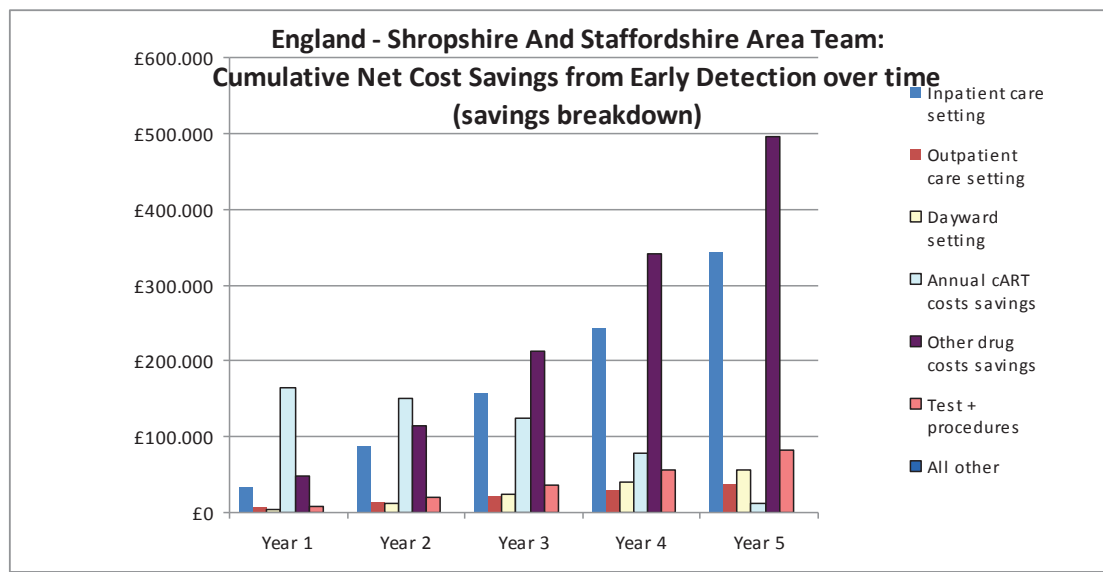
**Fig XCVII. England - Arden, Herefordshire And Worcestershire Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



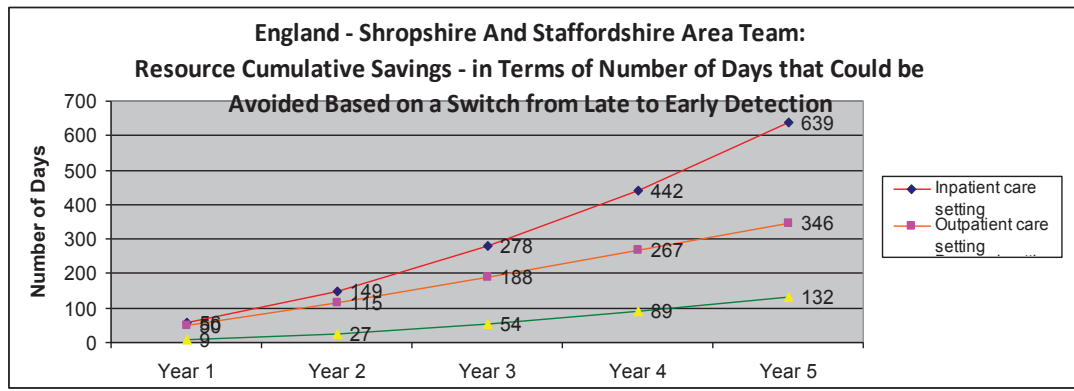
**Fig XCVIII. England - Shropshire And Staffordshire Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



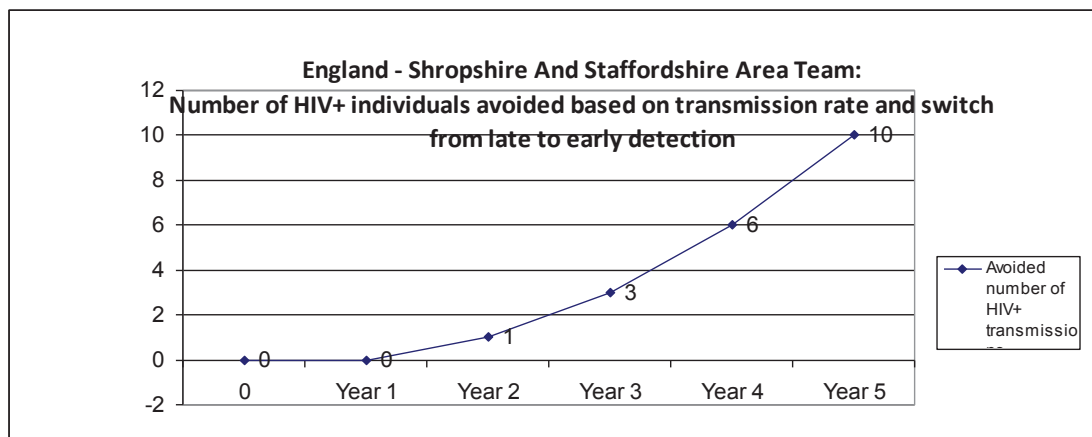
**Fig XCIX. England - Shropshire And Staffordshire Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



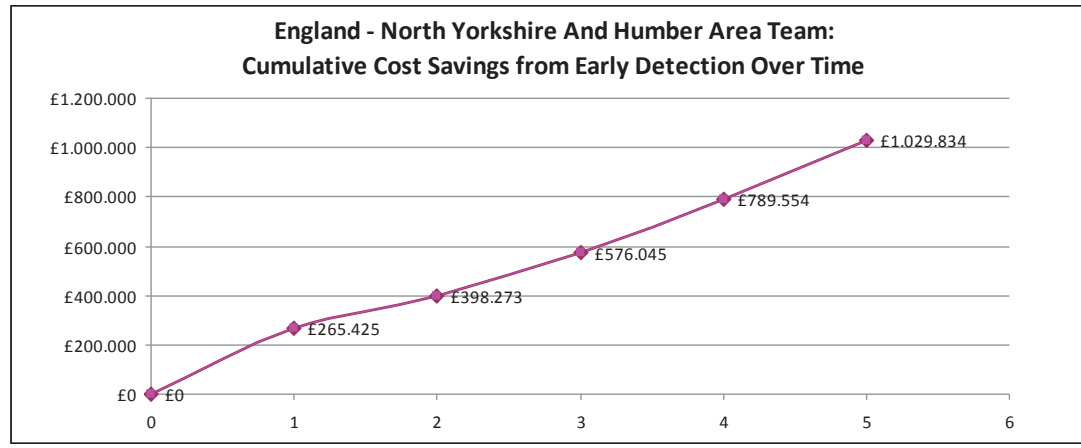
**Fig C. England - Shropshire And Staffordshire Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



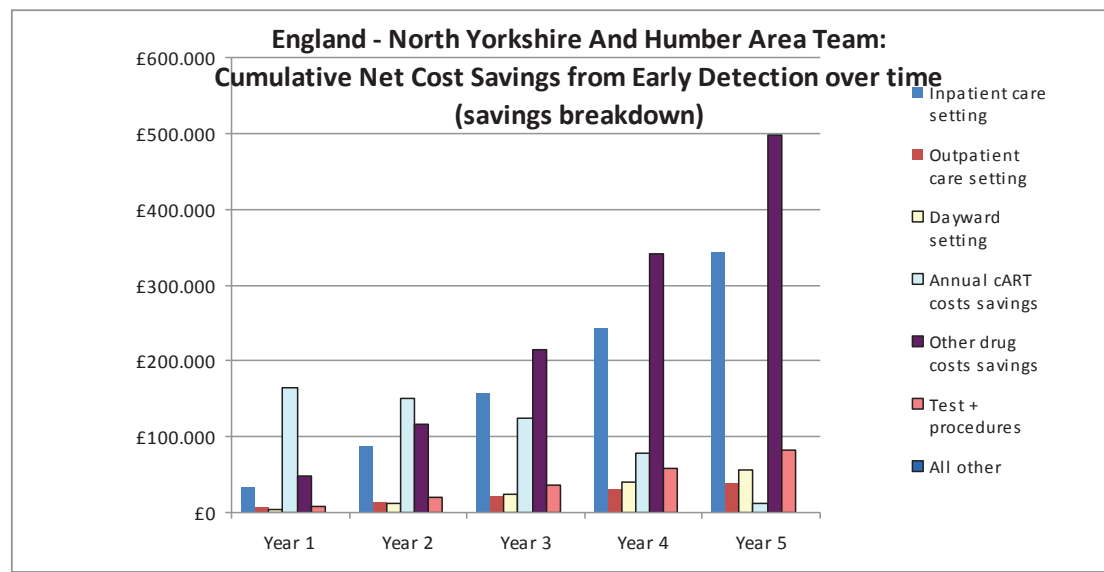
**Fig CI. England - Shropshire And Staffordshire Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig CII. England - North Yorkshire And Humber Area Team: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

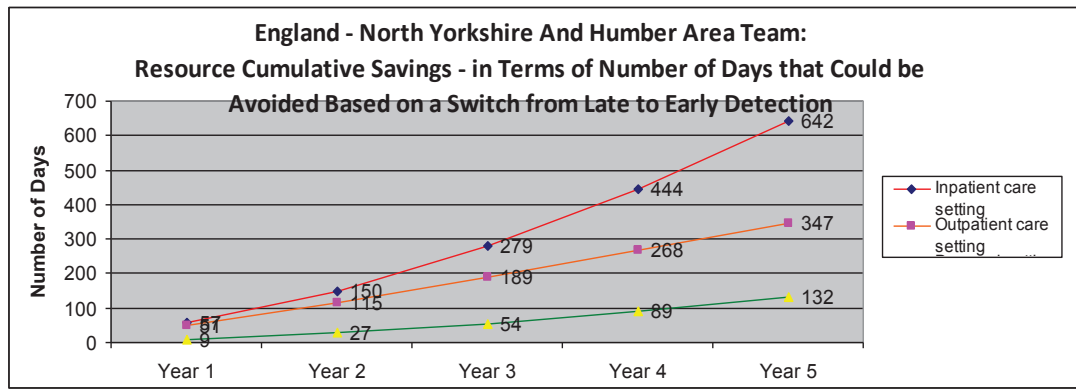


**Fig CIII. England - North Yorkshire And Humber Area Team: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

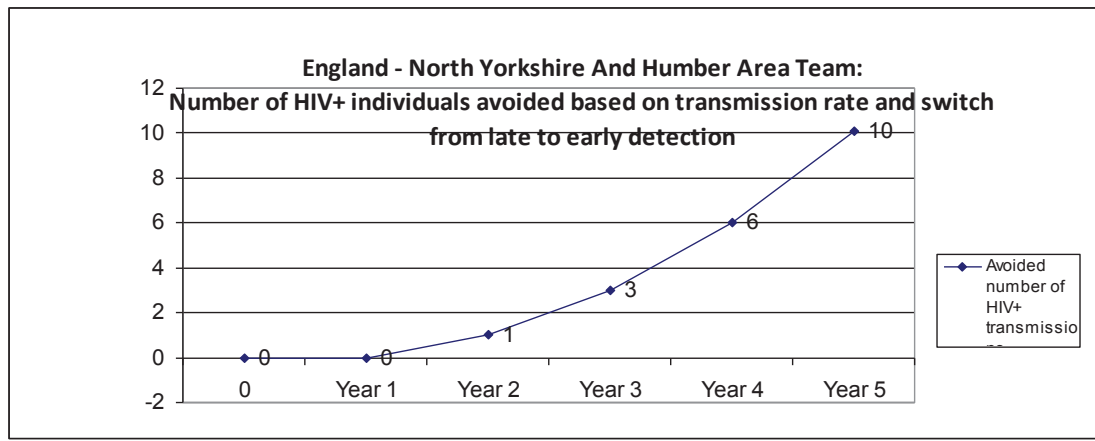




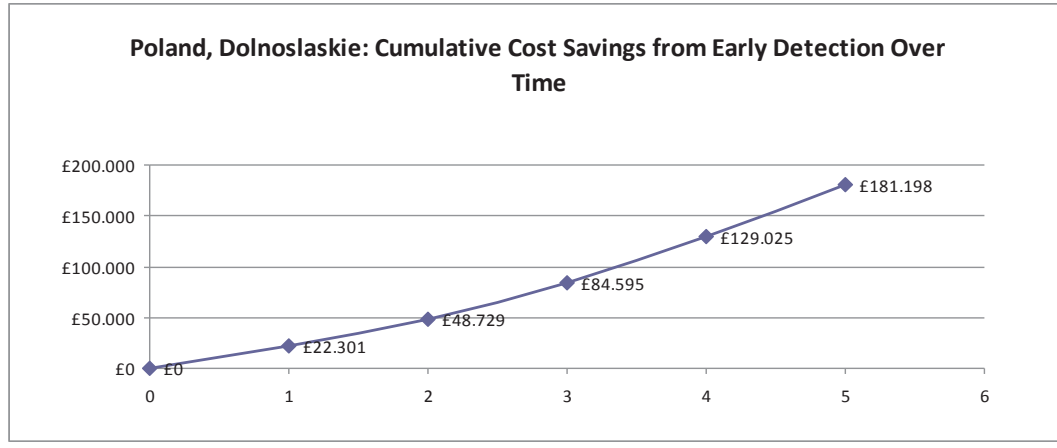
**Fig CIV. England - North Yorkshire And Humber Area Team: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



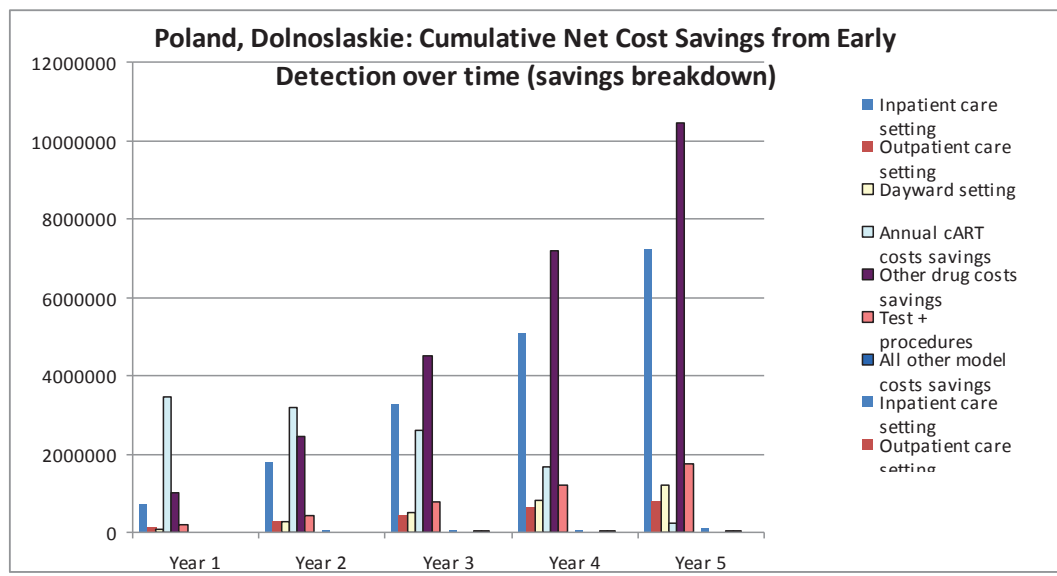
**Fig CV. England - North Yorkshire And Humber Area Team: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



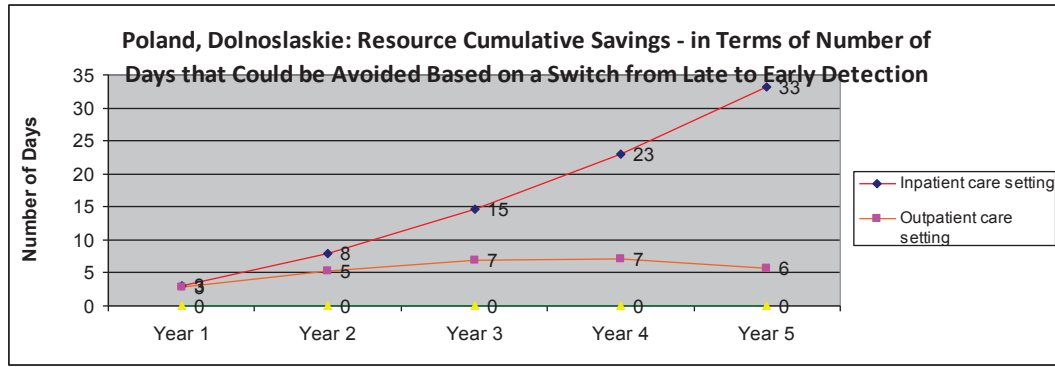
**Fig CVI. Poland, Dolnoslaskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



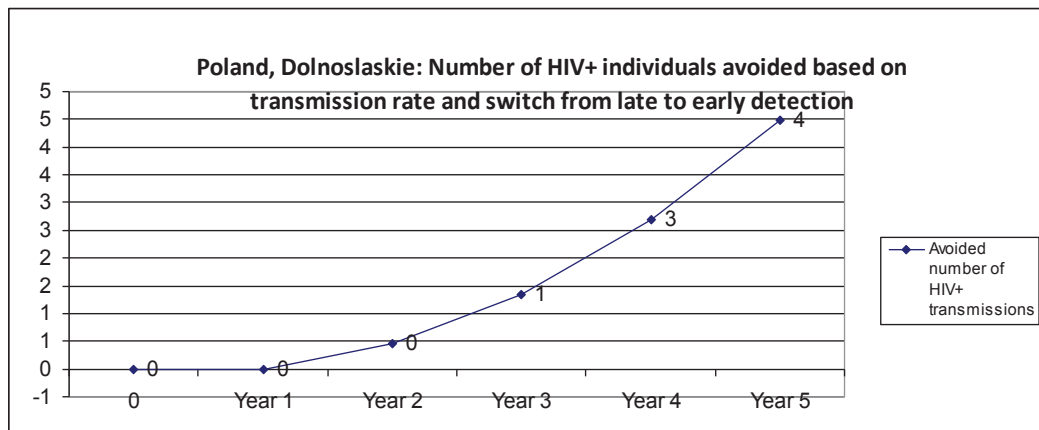
**Fig CVII. Poland, Dolnoslaskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



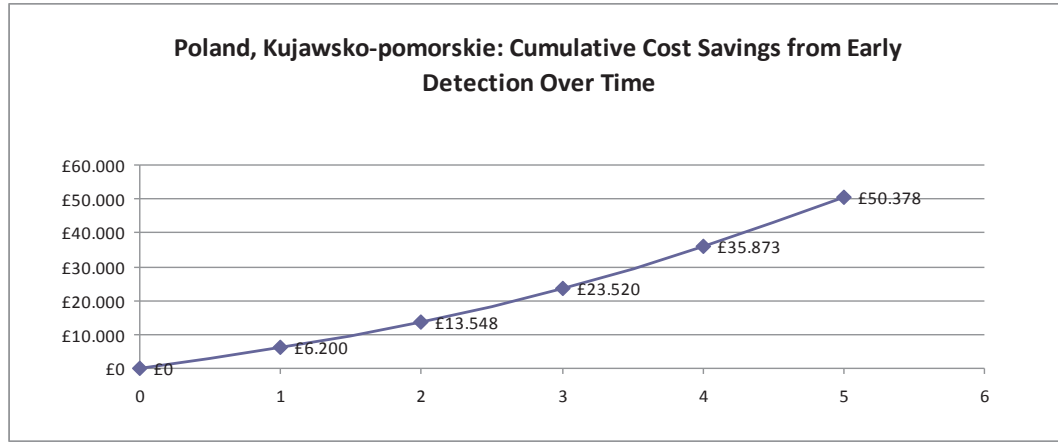
**Fig CVIII. Poland, Dolnoslaskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



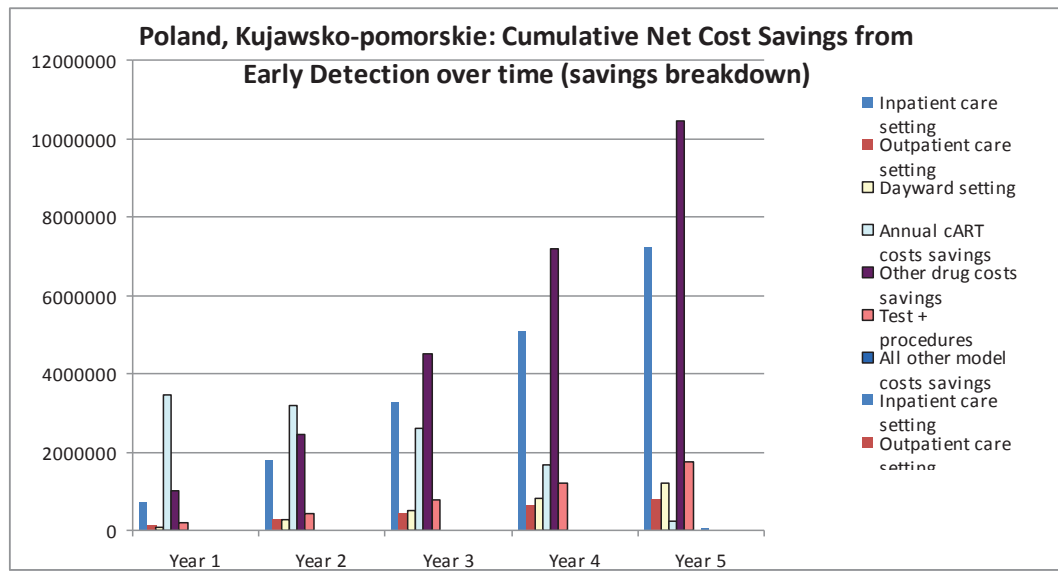
**Fig CIX. Poland – Dolnoslaskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



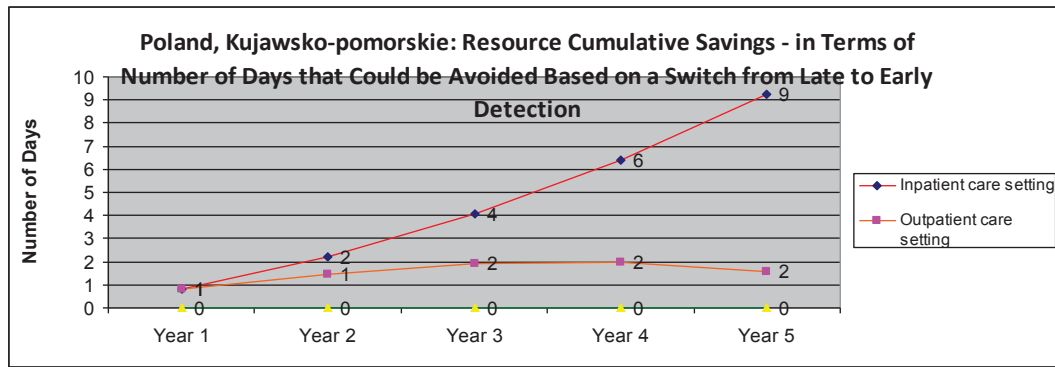
**Fig CX. Poland, Kujawsko-pomorskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



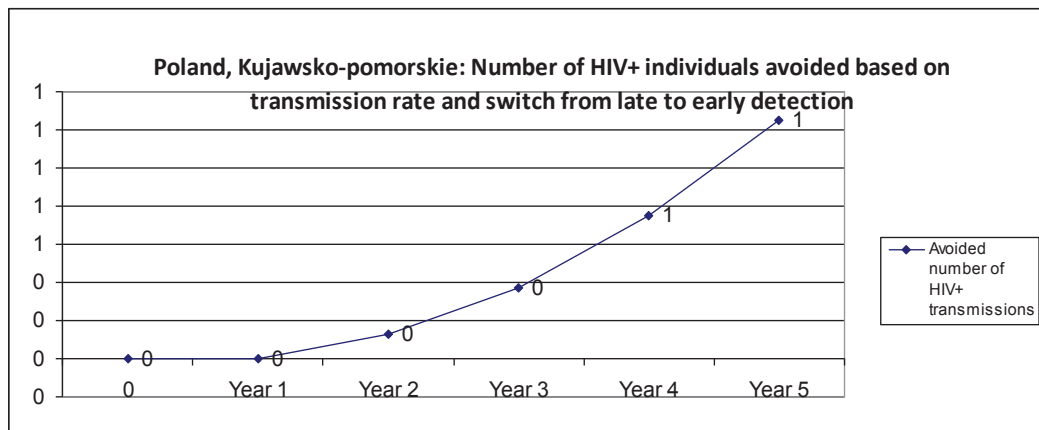
**Fig CXI. Poland, Kujawsko-pomorskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



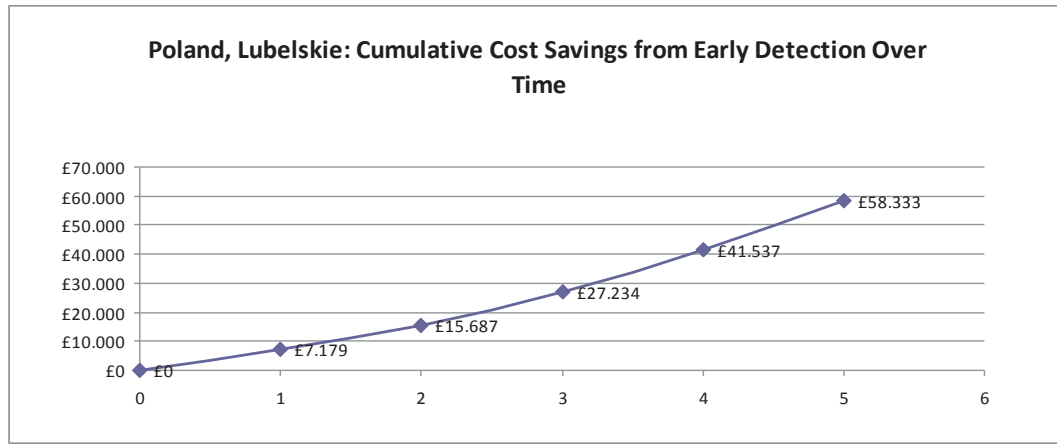
**Fig CXI. Poland, Kujawsko-pomorskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



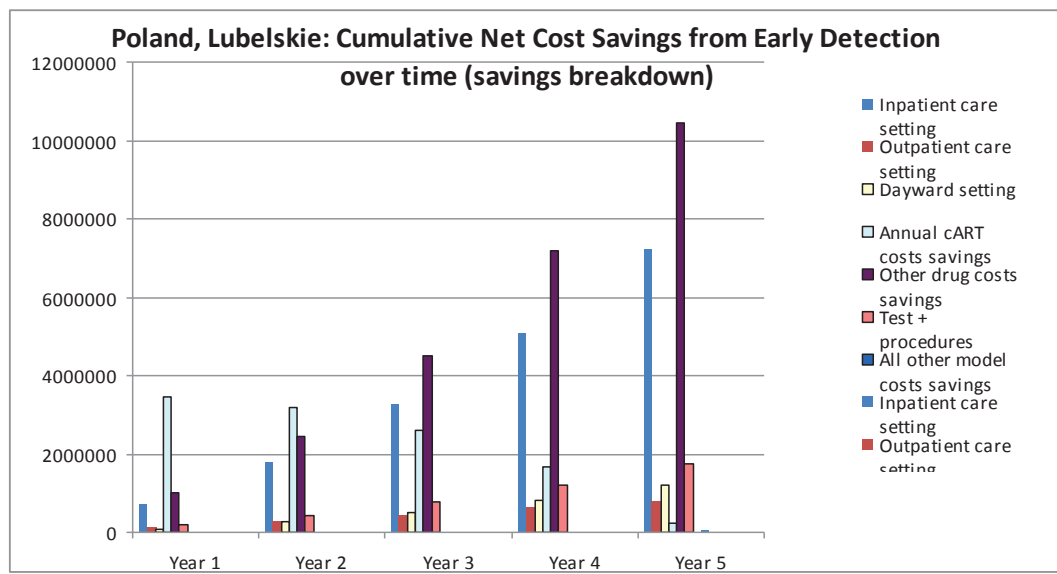
**Fig CXIII. Poland, Kujawsko-pomorskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



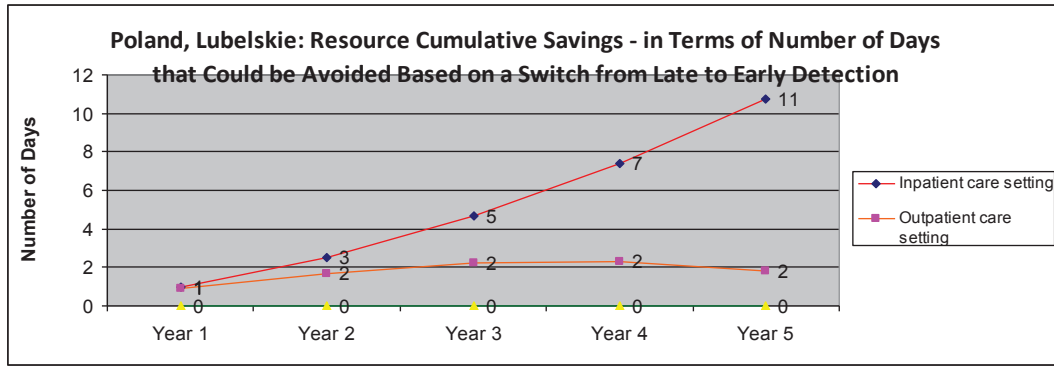
**Fig CXIV. Poland, Lubelskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



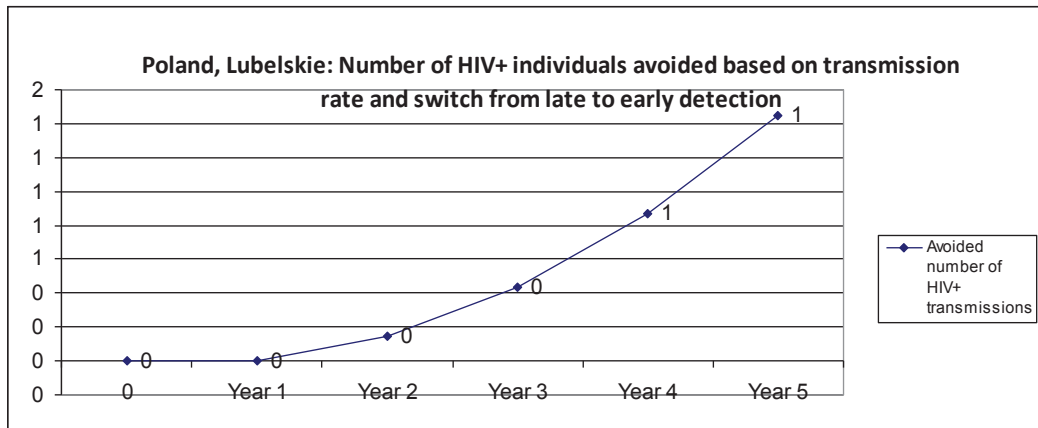
**Fig CXV. Poland, Lubelskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



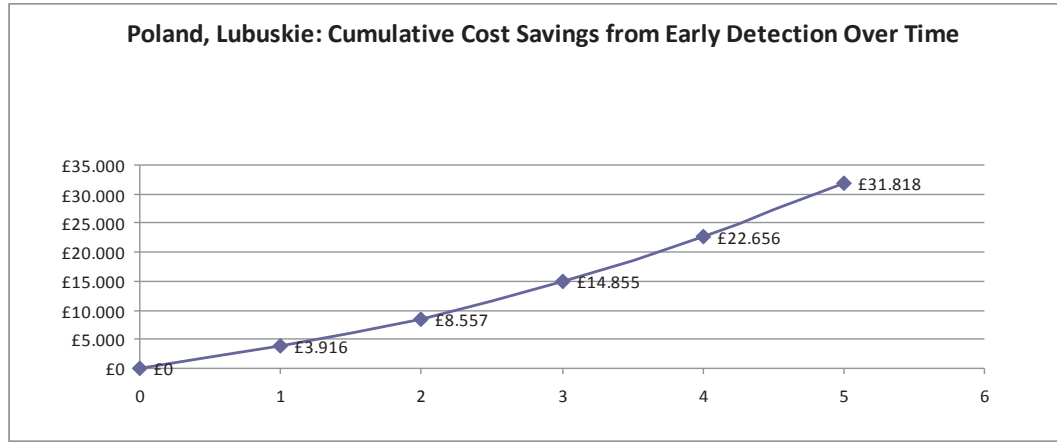
**Fig CXVI. Poland, Lubelskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



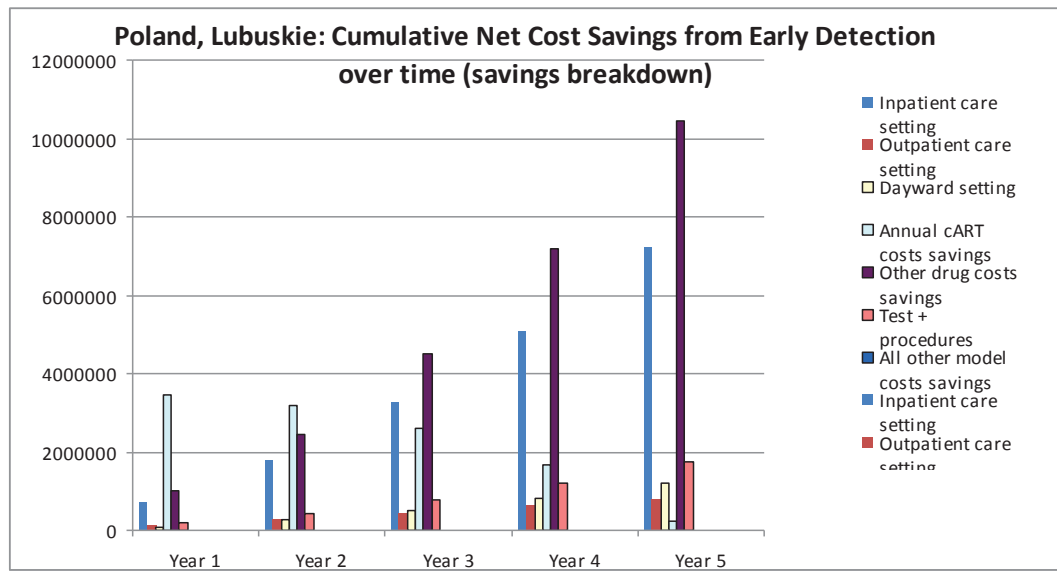
**Fig CXVII. Poland, Lubelskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig CXVIII. Poland, Lubuskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

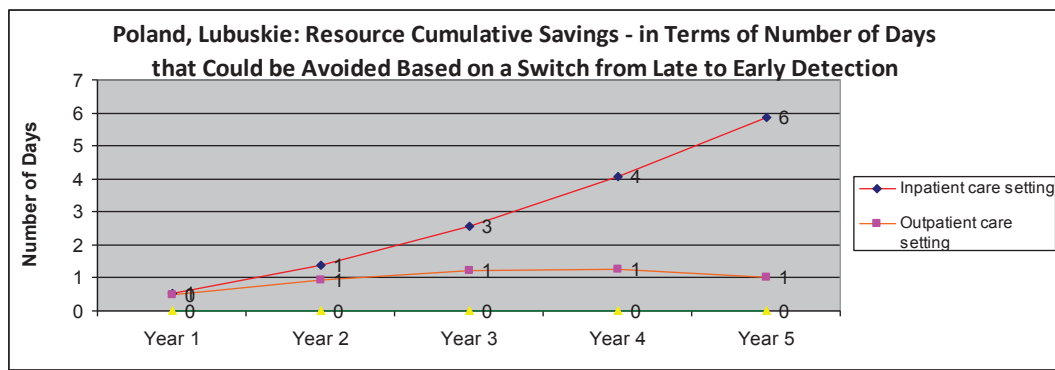


**Fig CXIX. Poland, Lubuskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

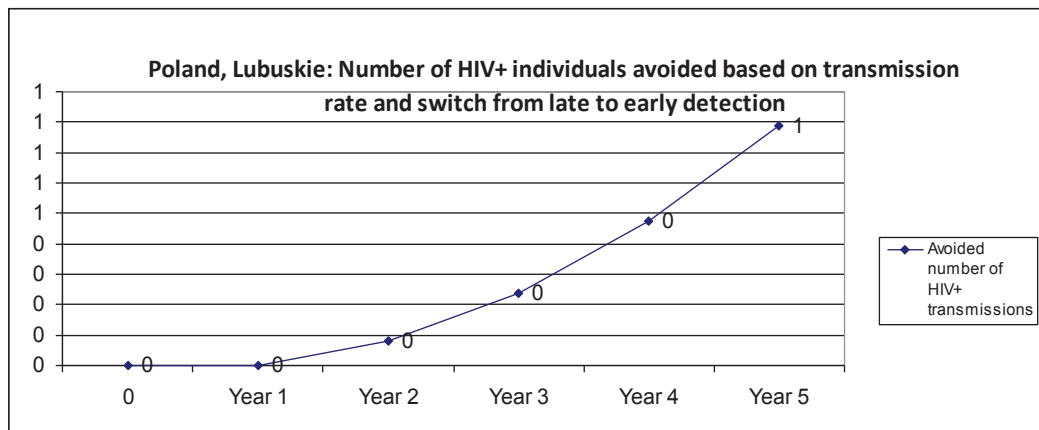




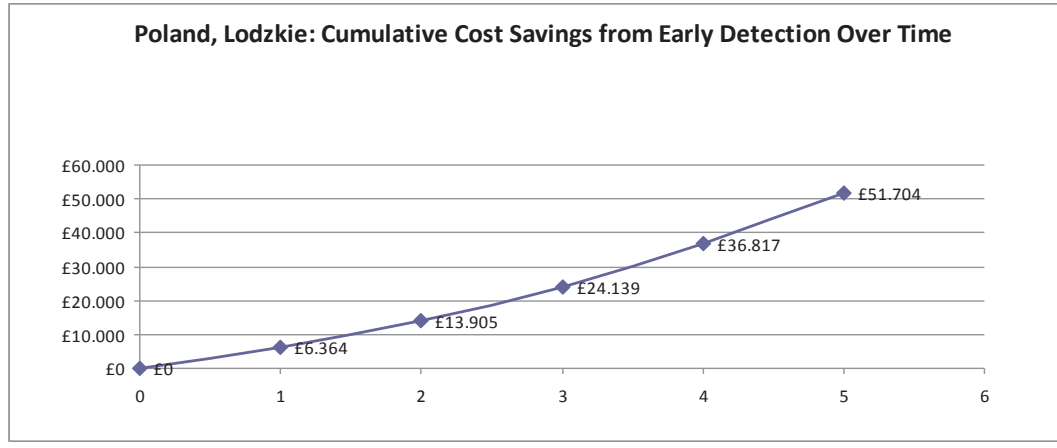
**Fig CXX. Poland, Lubuskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



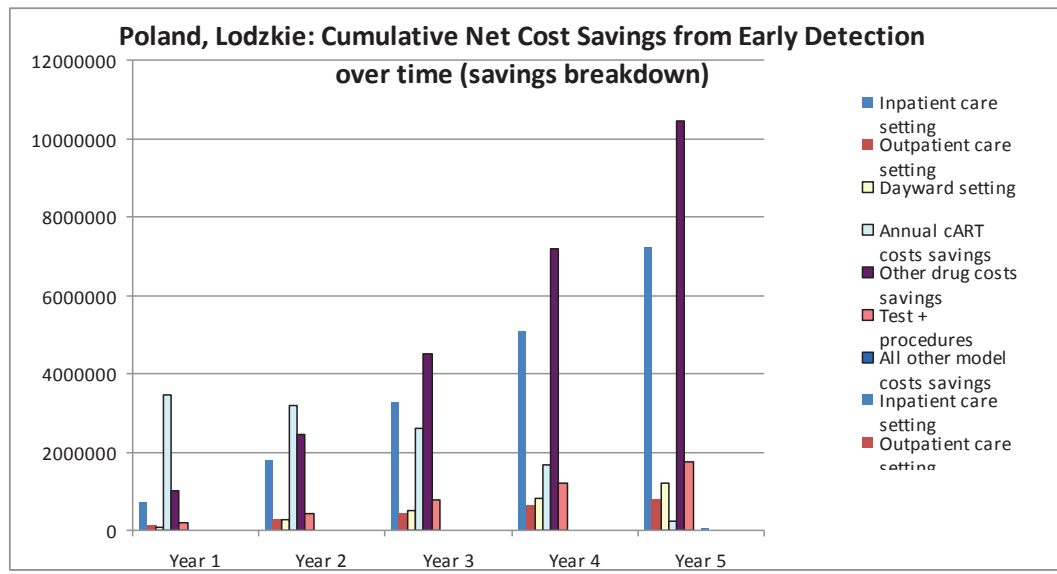
**Fig CXXI. Poland, Lubuskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



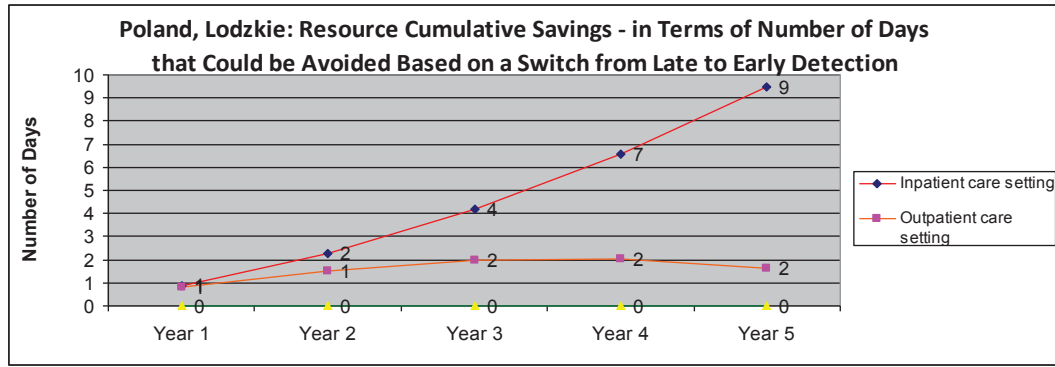
**Fig CXXII. Poland, Lodzkie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



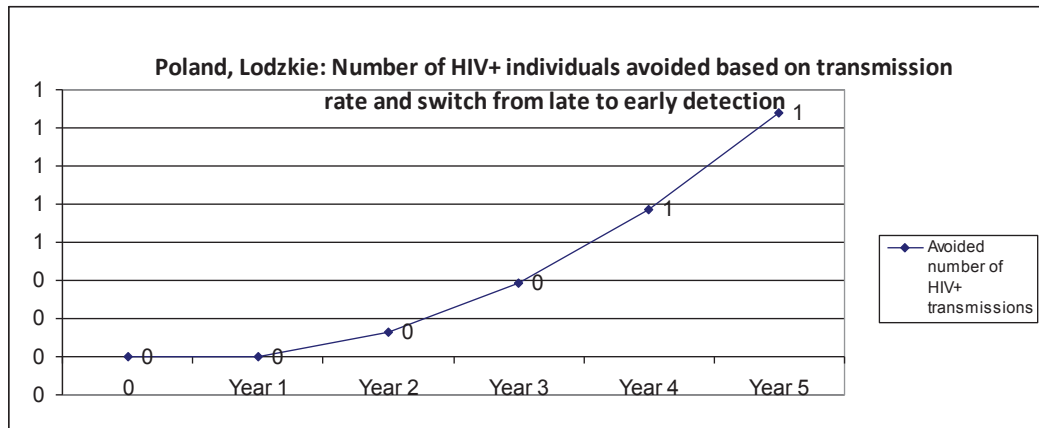
**Fig CXXIII. Poland, Lodzkie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



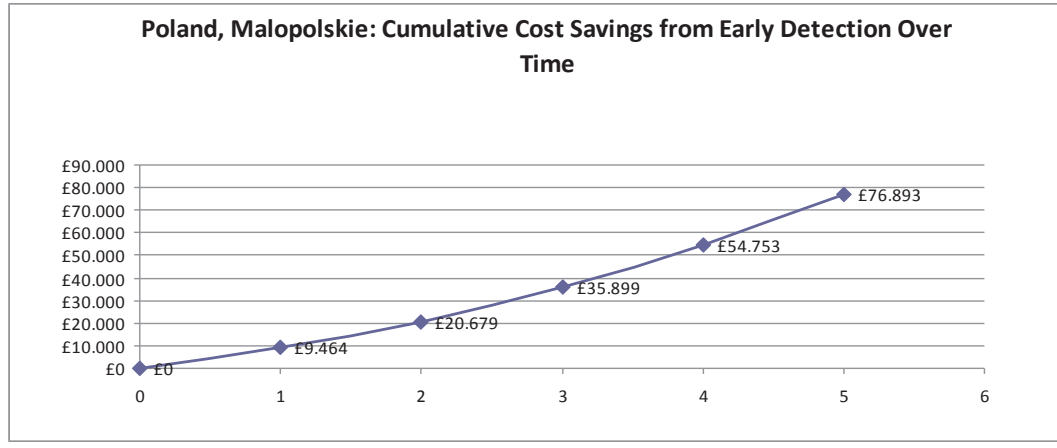
**Fig CXXIV. Poland, Lodzkie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



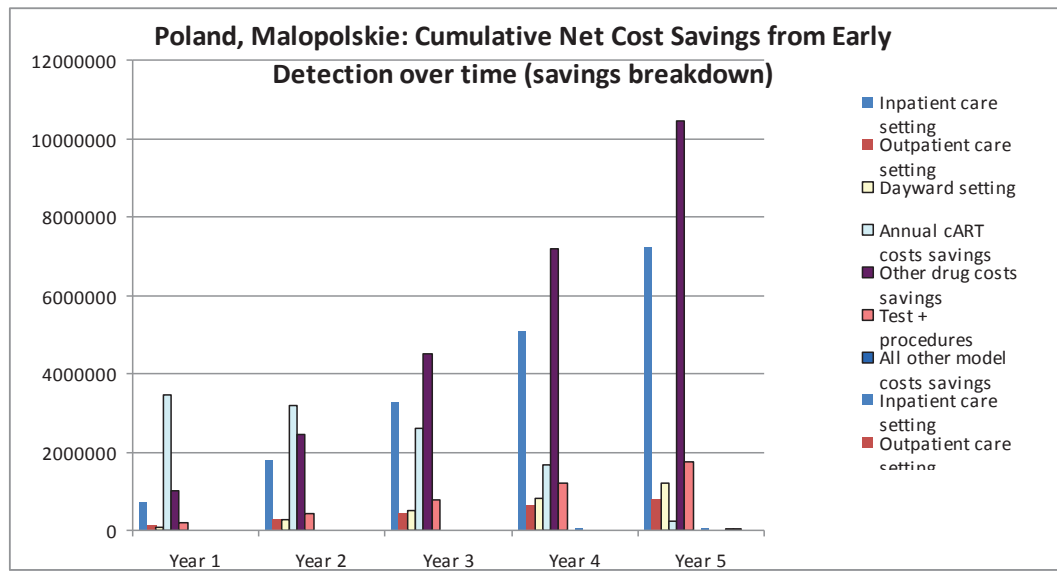
**Fig CXXV. Poland, Lodzkie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



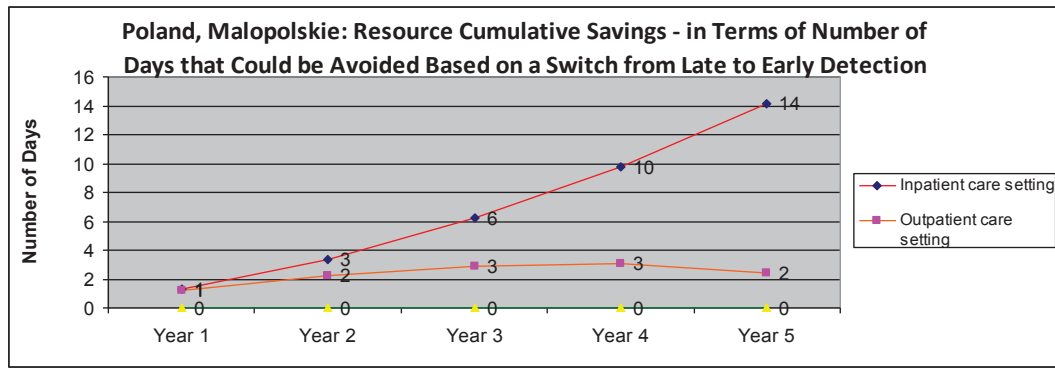
**Fig CXXVI. Poland, Malopolskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



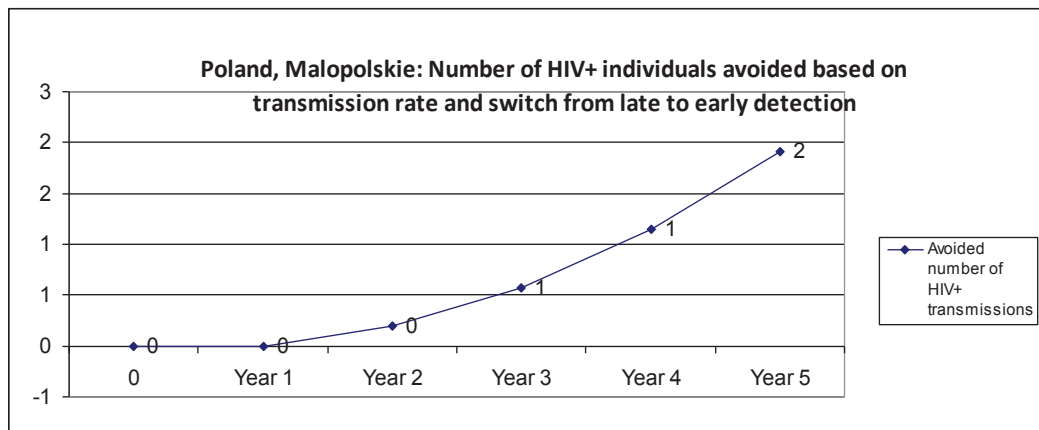
**Fig CXXVII. Poland, Malopolskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



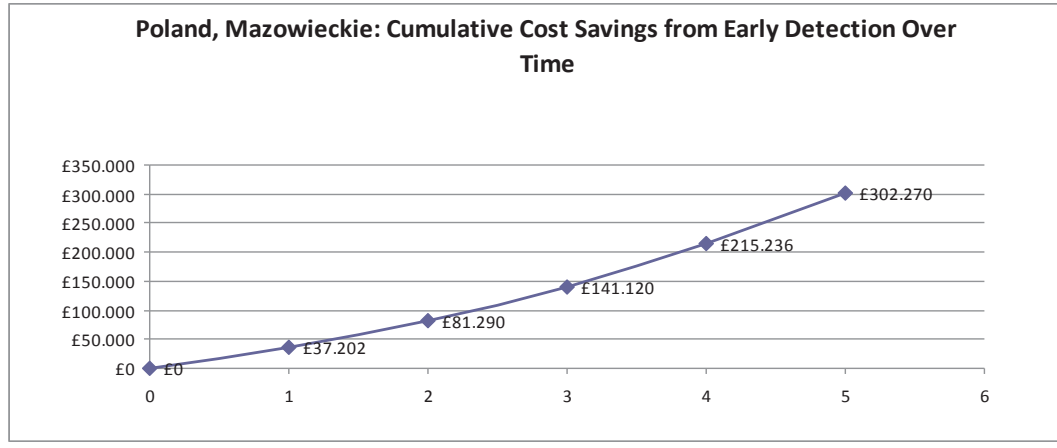
**Fig CXXVIII. Poland, Malopolskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



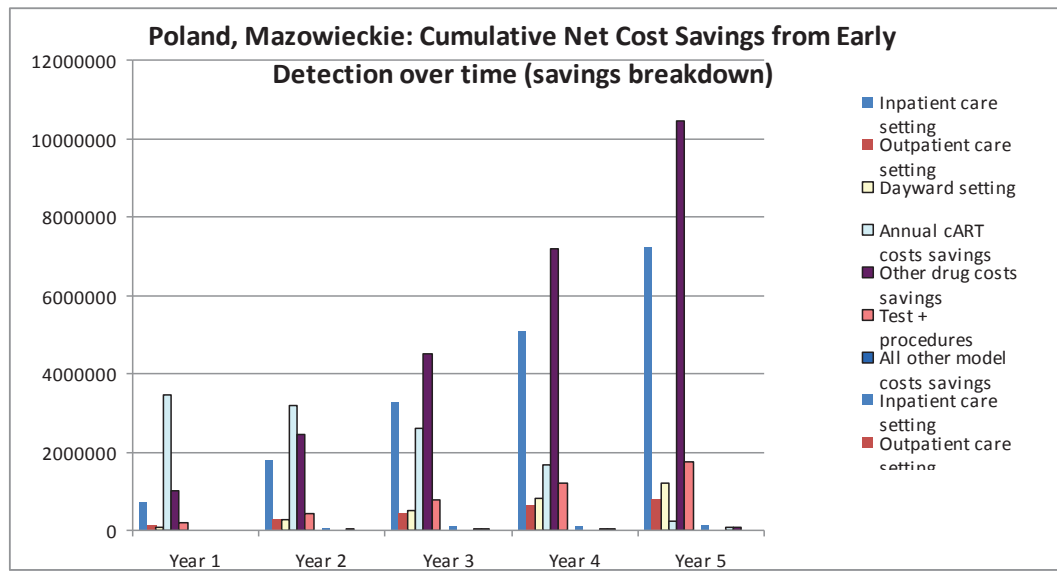
**Fig CXXIX. Poland, Malopolskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



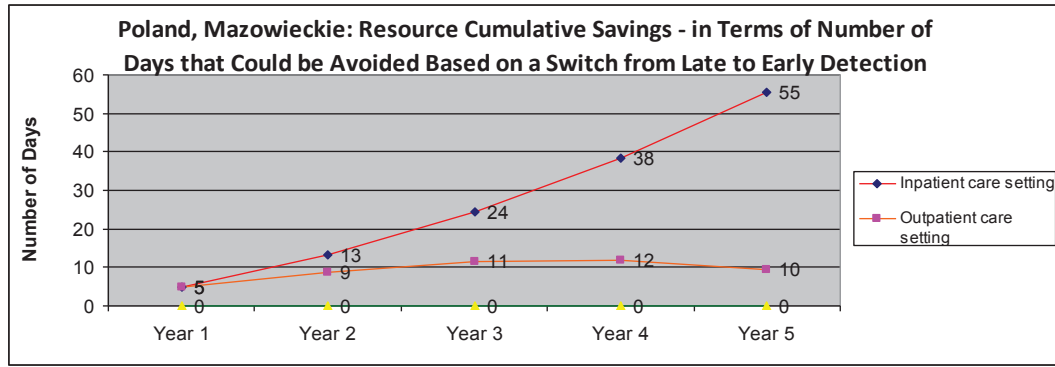
**Fig CXXX. Poland, Mazowieckie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



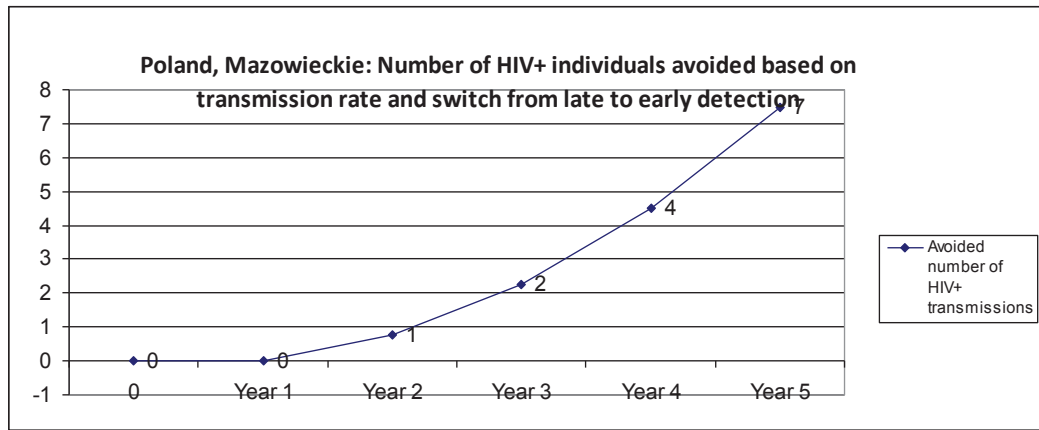
**Fig CXXXI. Poland, Mazowieckie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



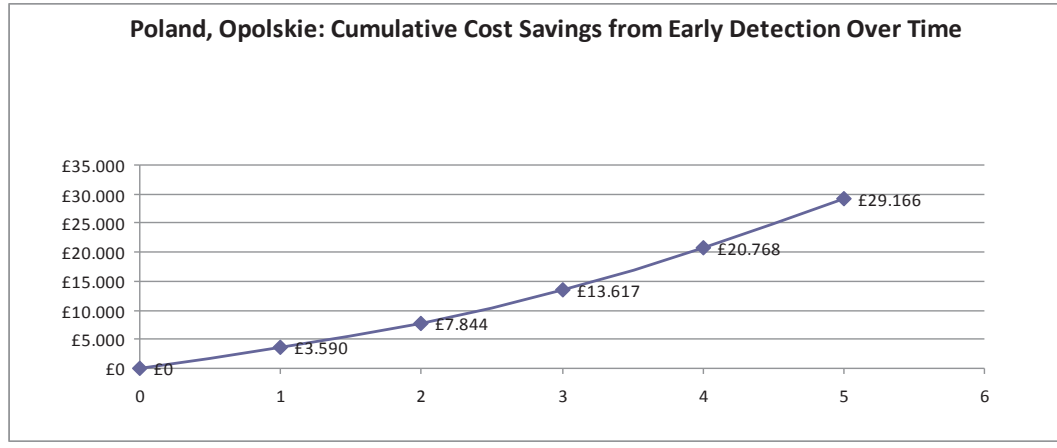
**Fig CXXXII. Poland, Mazowieckie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



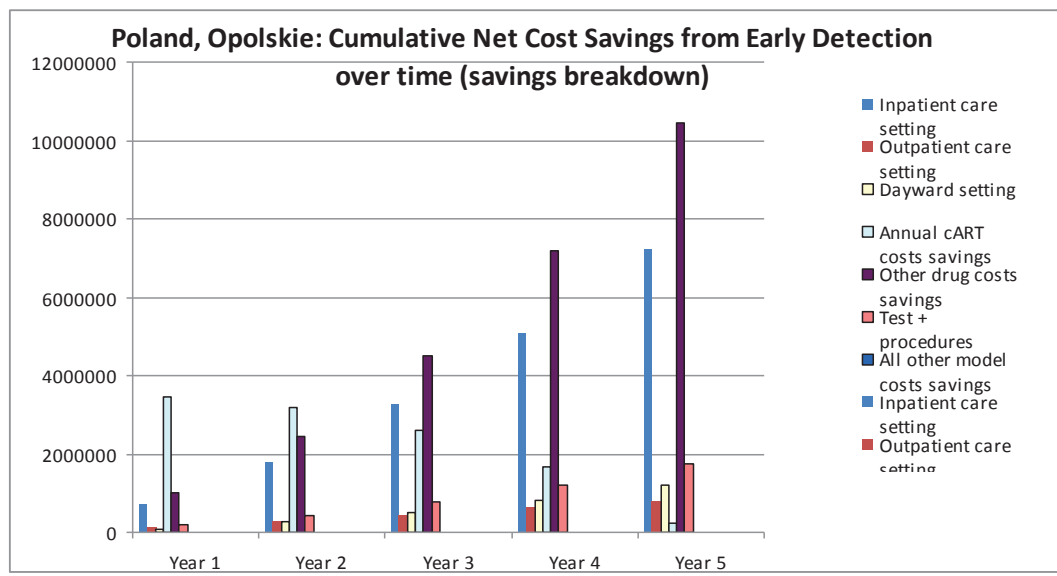
**Fig CXXXIII. Poland, Mazowieckie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig CXXXIV. Poland, Opolskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

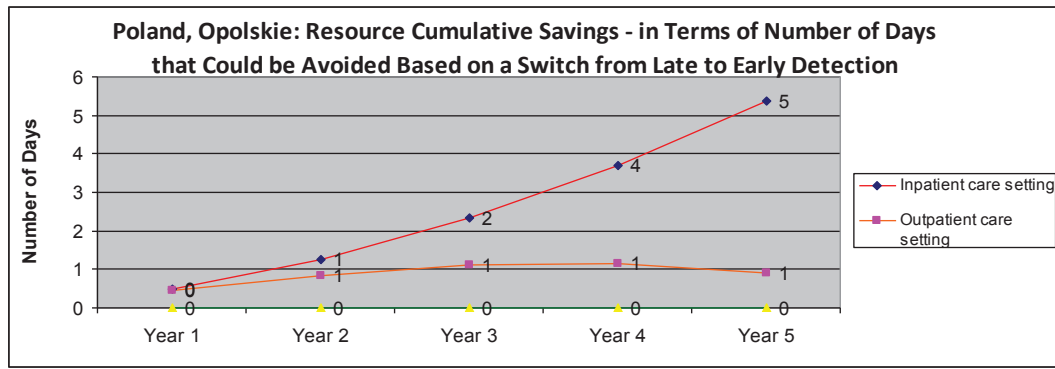


**Fig CXXXV. Poland, Opolskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

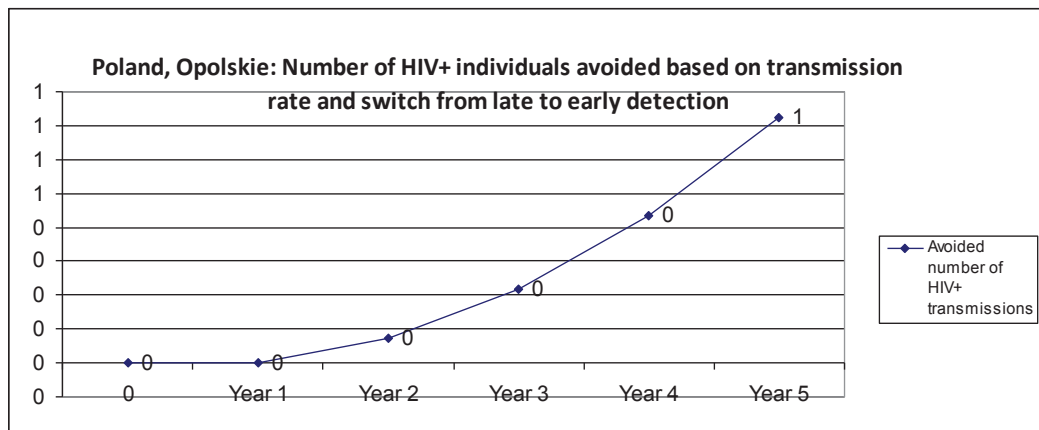




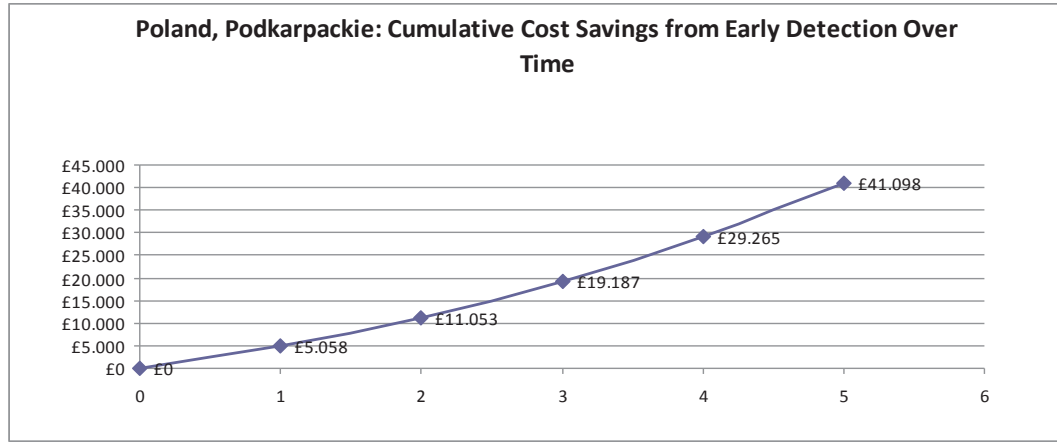
**Fig CXXXVI. Poland, Opolskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



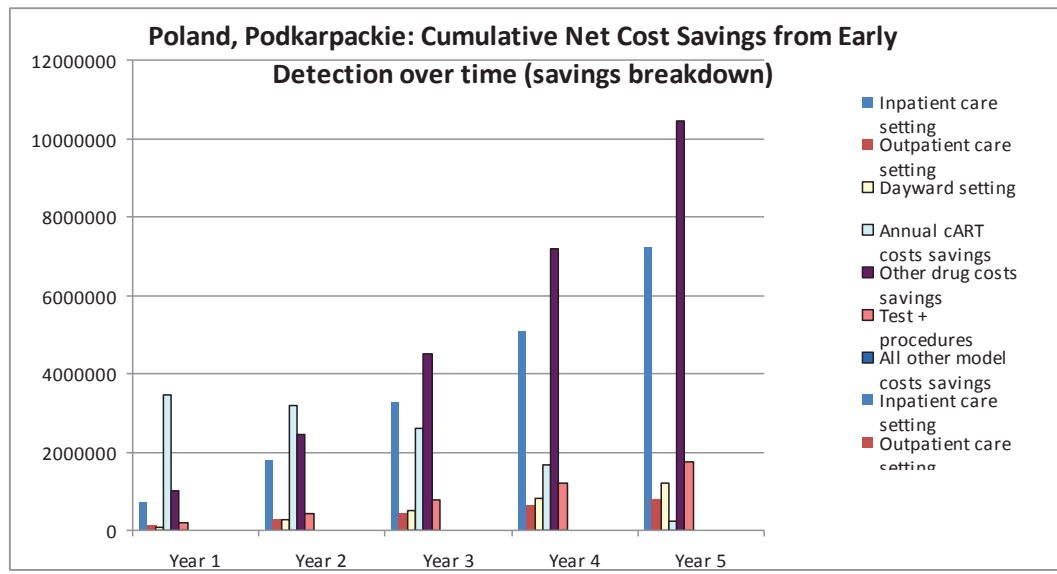
**Fig CXXXVII. Poland, Opolskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



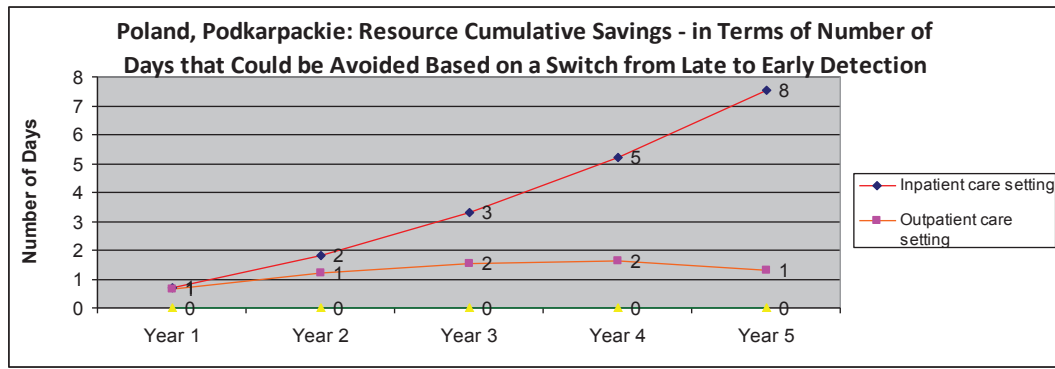
**Fig CXXXVIII. Poland, Podkarpackie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



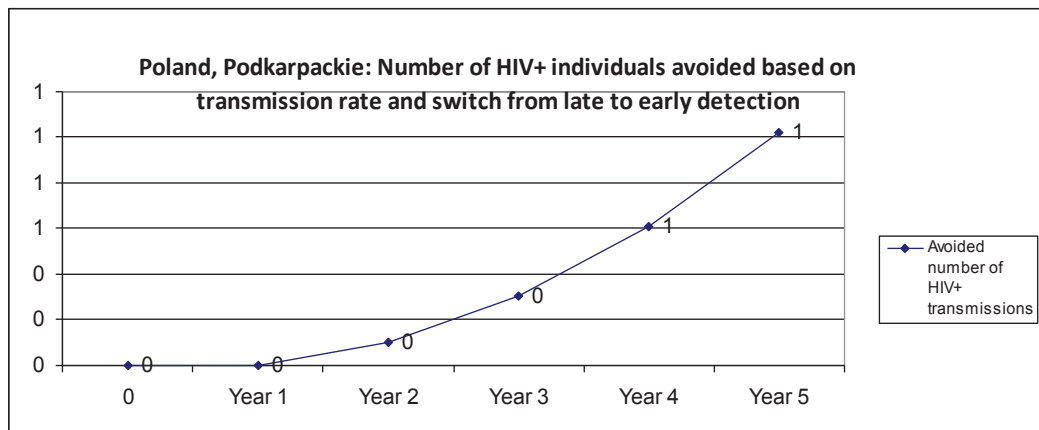
**Fig CXXXIX. Poland, Podkarpackie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



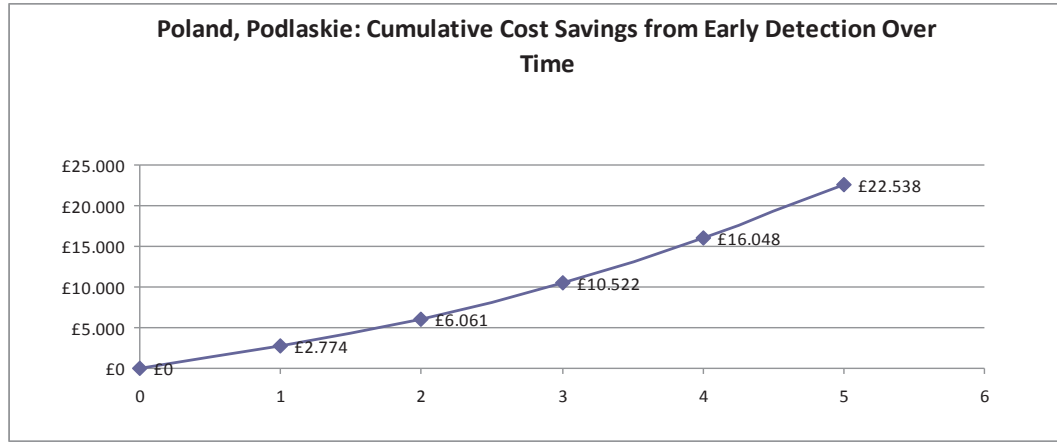
**Fig CXL. Poland, Podkarpackie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



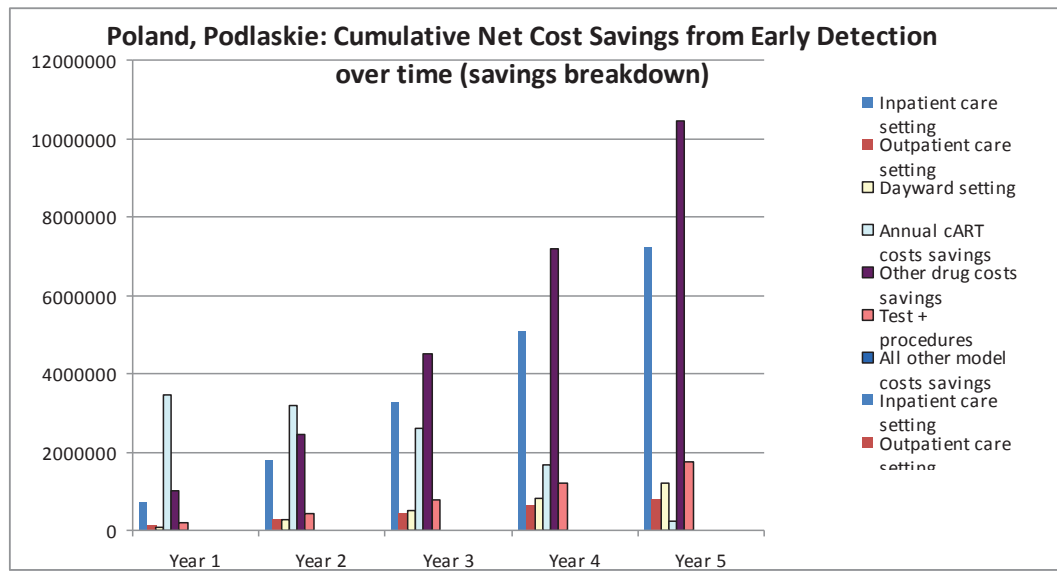
**Fig CXLI. Poland, Podkarpackie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



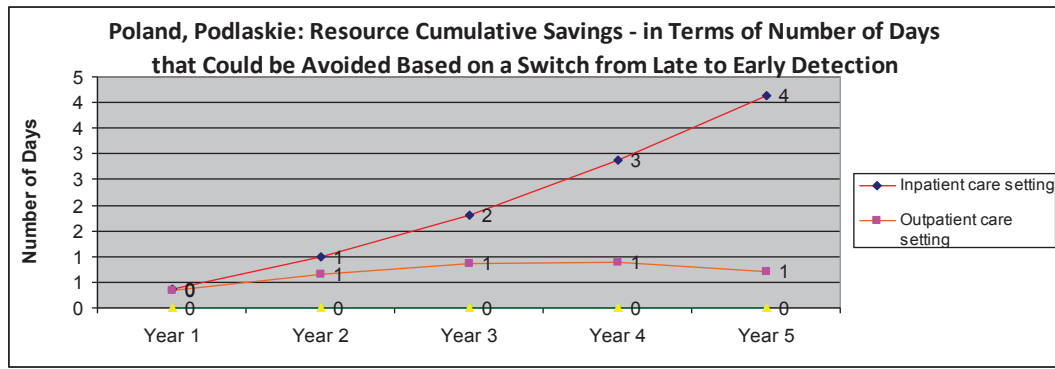
**Fig CXLII. Poland, Podlaskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



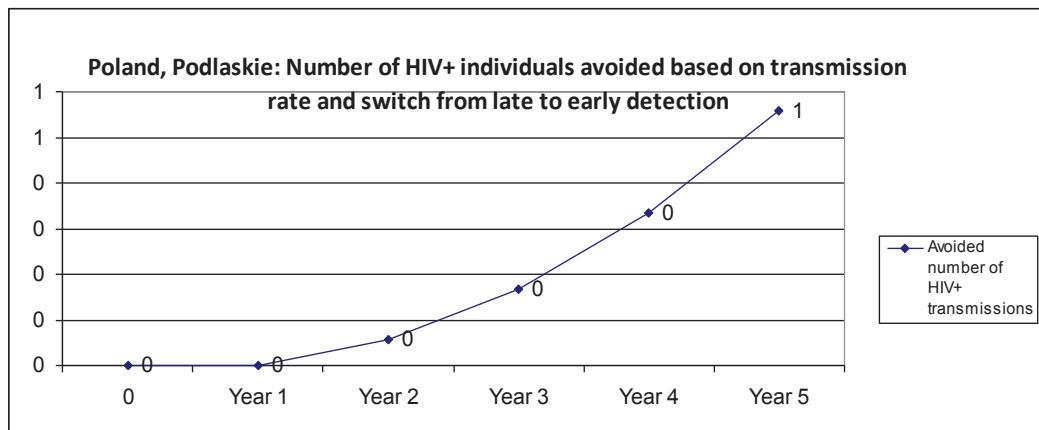
**Fig CXLIII. Poland, Podlaskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



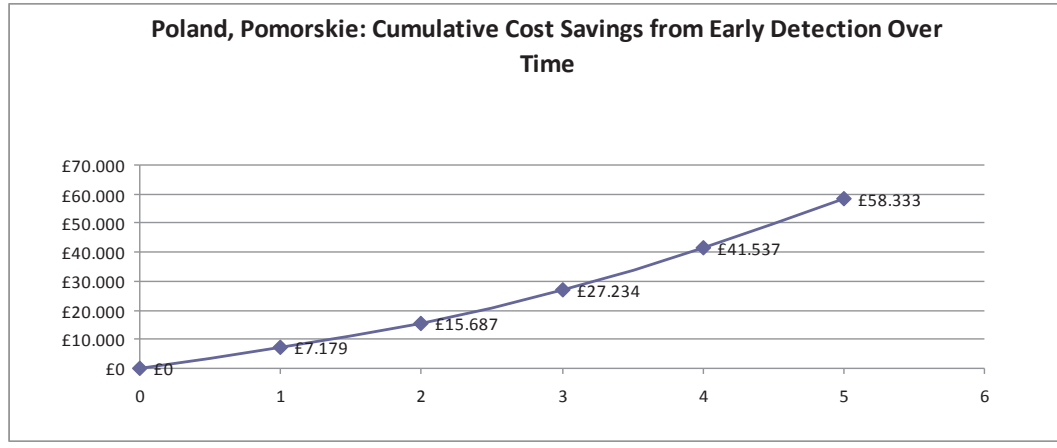
**Fig CXLIV. Poland, Podlaskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



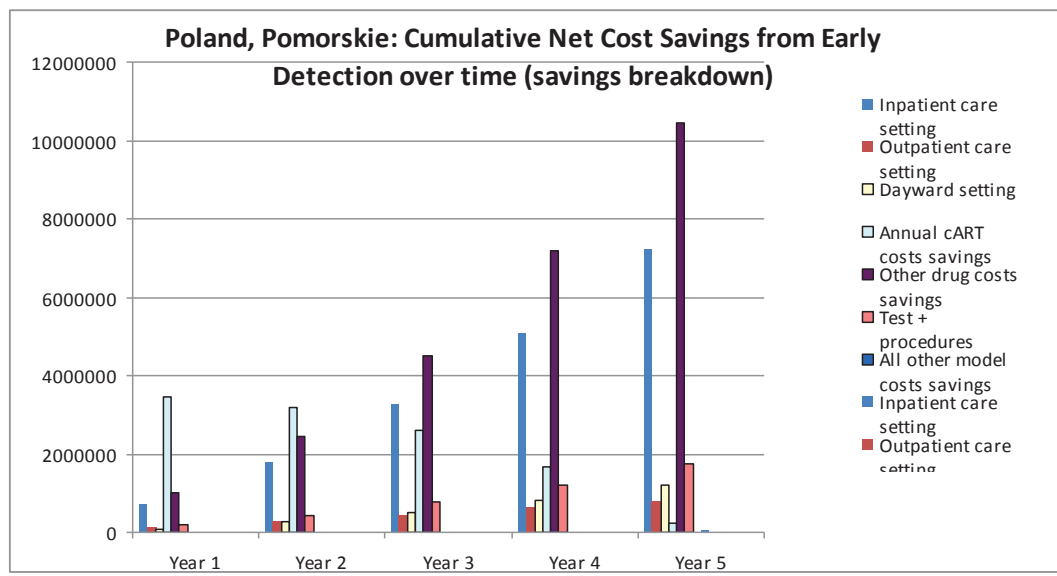
**Fig CXLV. Poland, Podlaskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



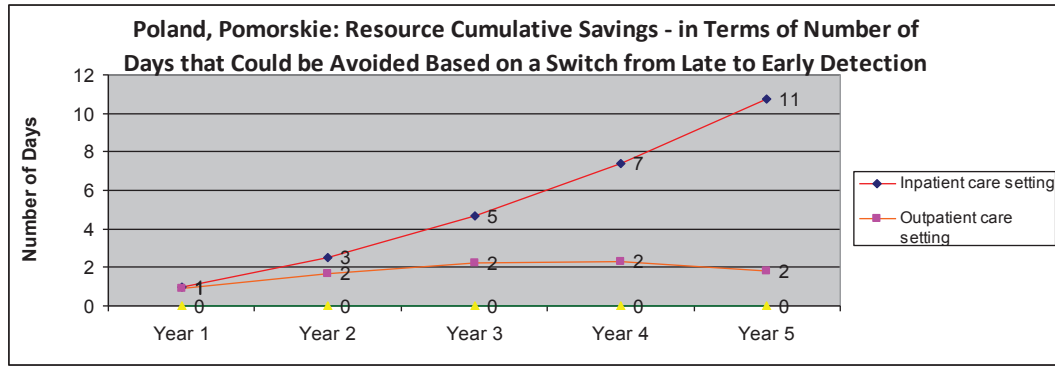
**Fig CXLVI. Poland, Pomorskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



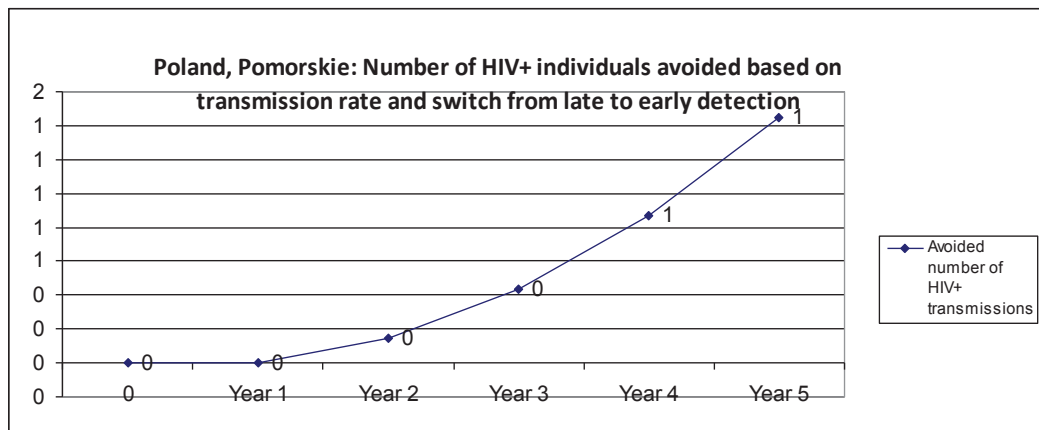
**Fig CXLVII. Poland, Pomorskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



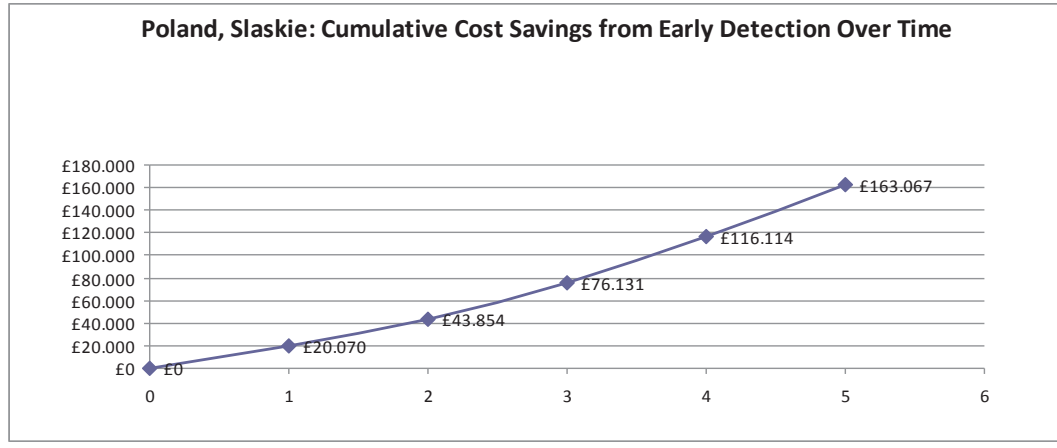
**Fig CXLVIII. Poland, Pomorskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



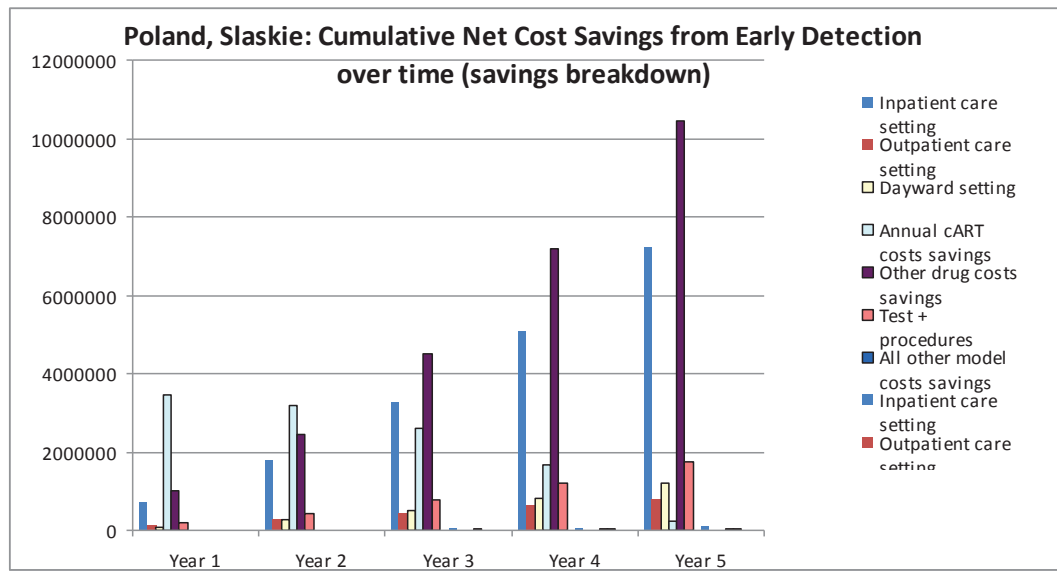
**Fig CXLIX. Poland, Pomorskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig CL. Poland, Slaskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

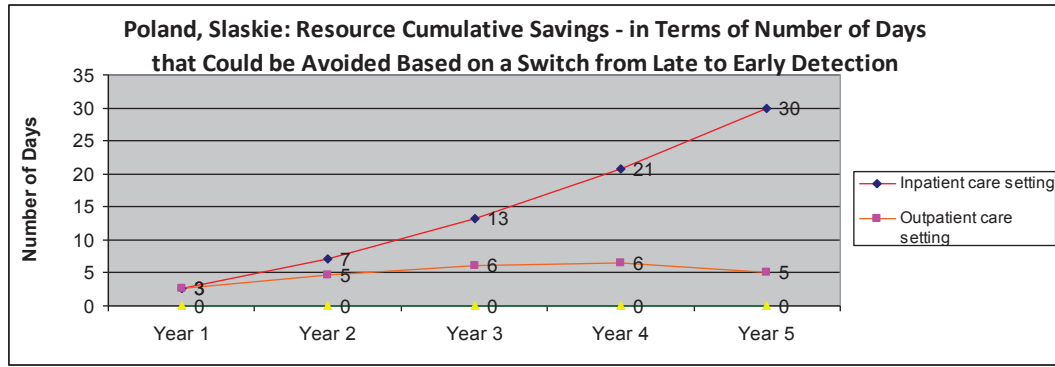


**Fig CLI. Poland, Slaskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

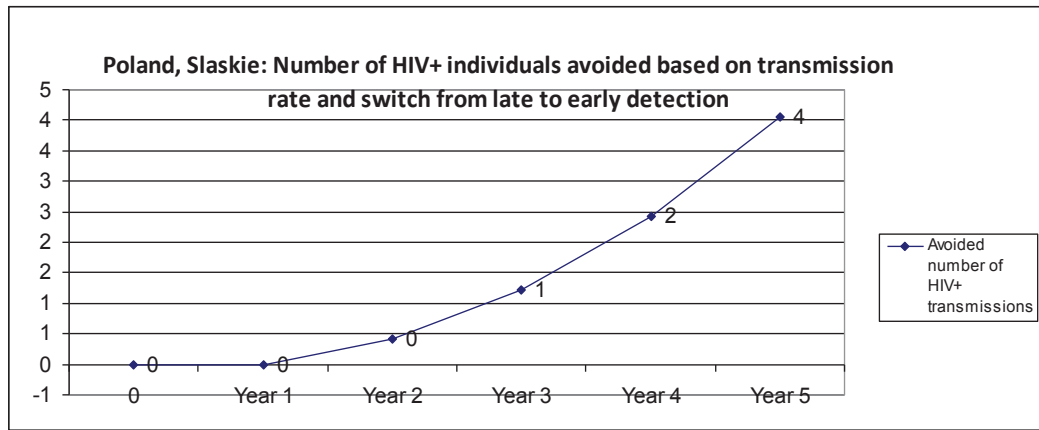




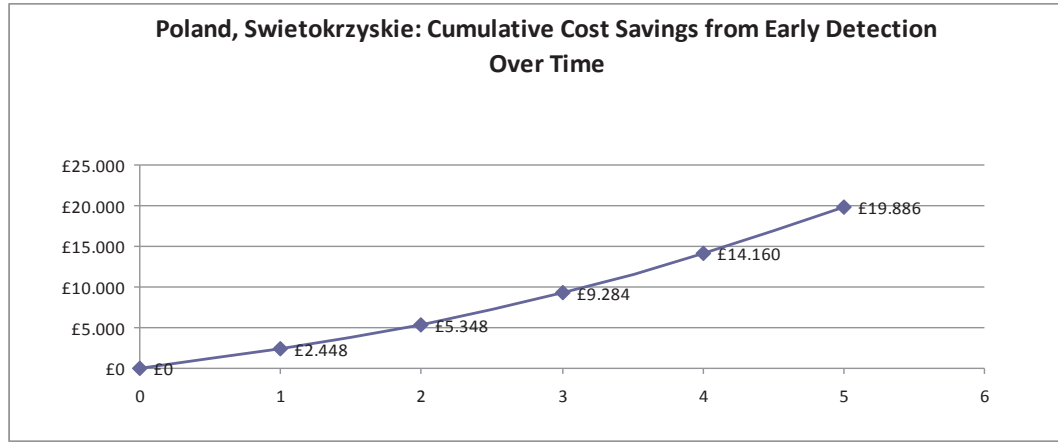
**Fig CLII. Poland, Slaskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



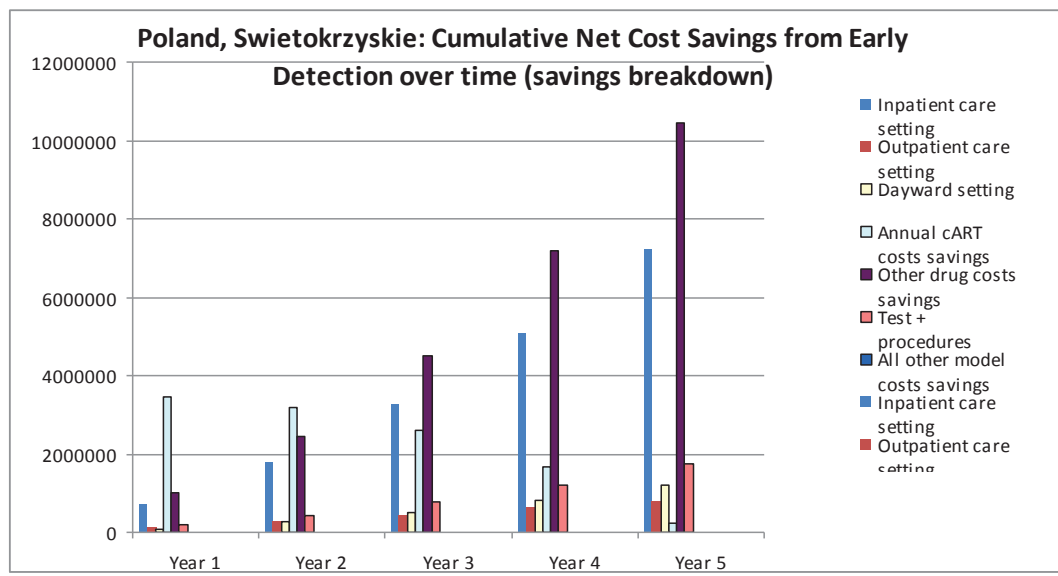
**Fig CLIII. Poland, Slaskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



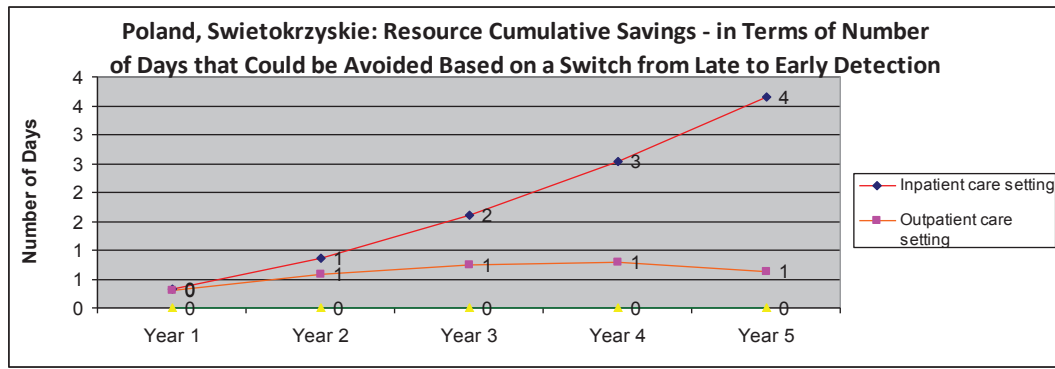
**Fig CLIV. Poland, Swietokrzyskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



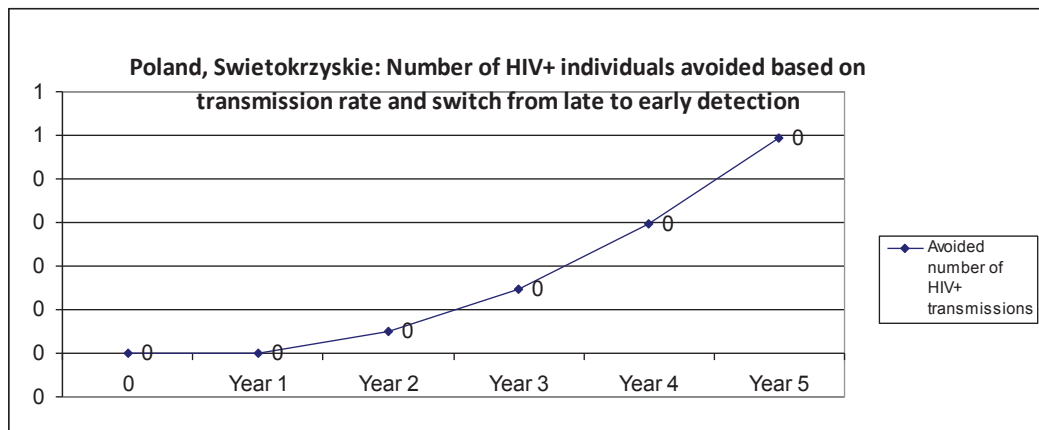
**Fig CLV. Poland, Swietokrzyskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



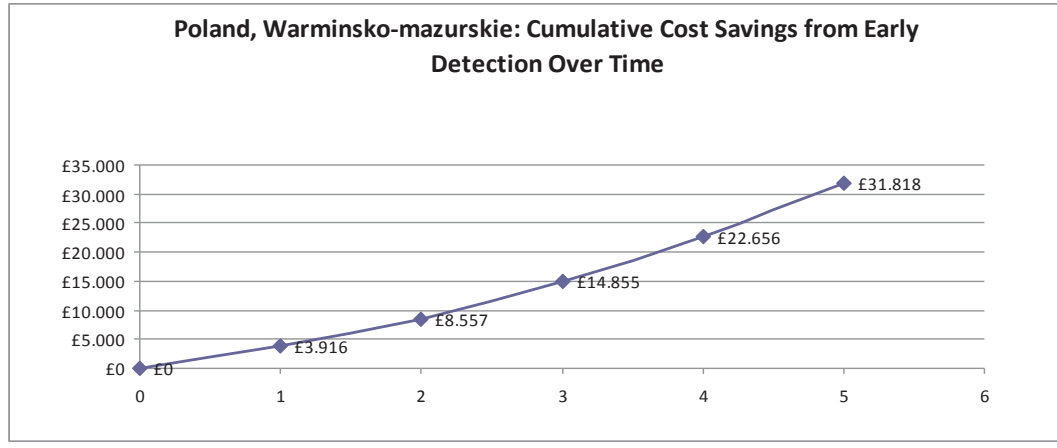
**Fig CLVI. Poland, Swietokrzyskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



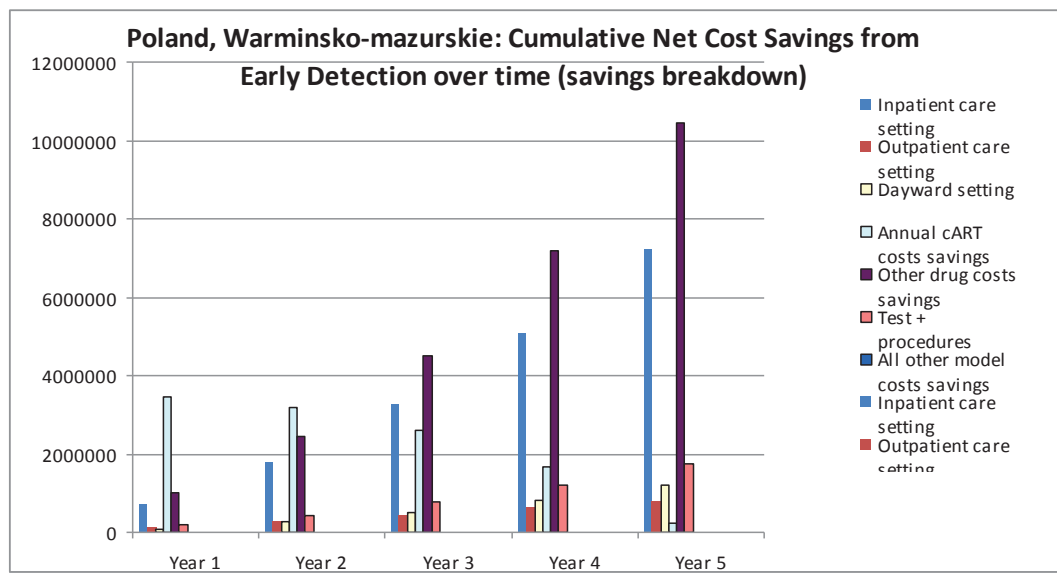
**Fig CLVII. Poland, Swietokrzyskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



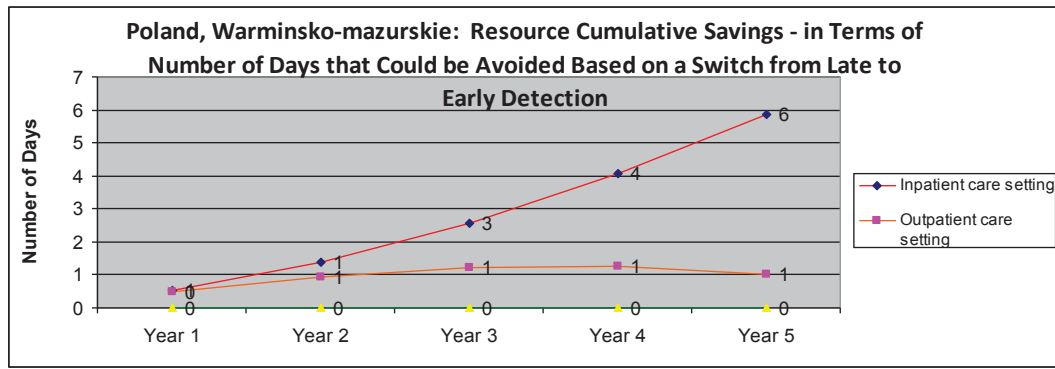
**Fig CLVIII. Poland, Warminsko-mazurskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



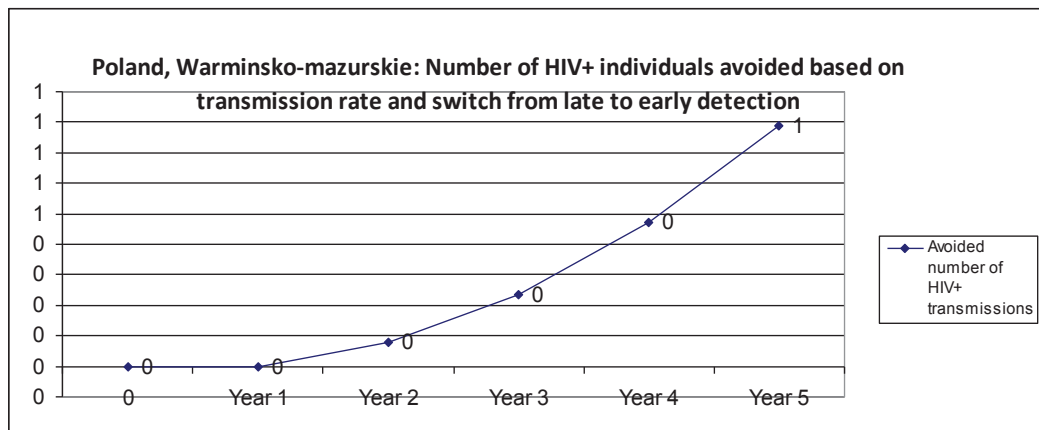
**Fig CLIX. Poland, Warminsko-mazurskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



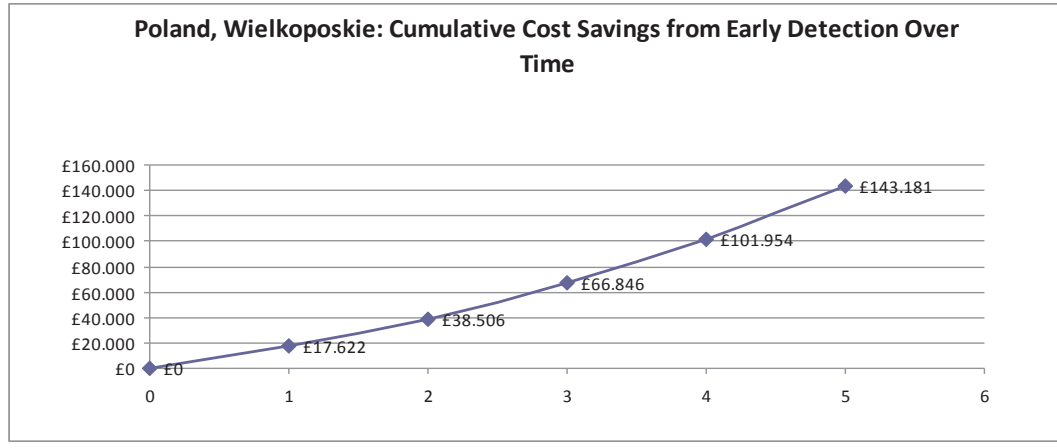
**Fig CLX. Poland, Warminsko-mazurskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



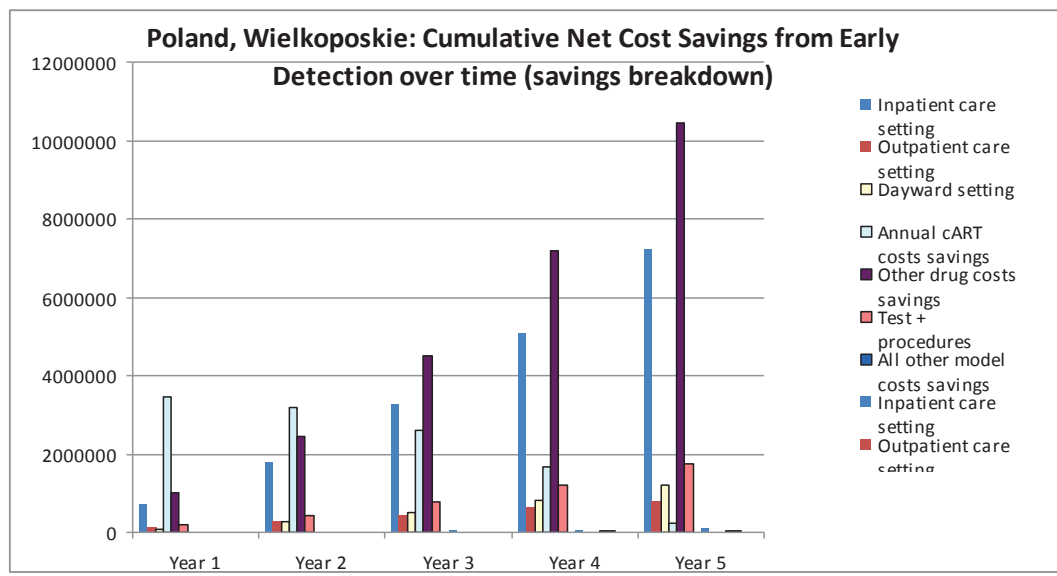
**Fig CLXI. Poland, Warminsko-mazurskie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



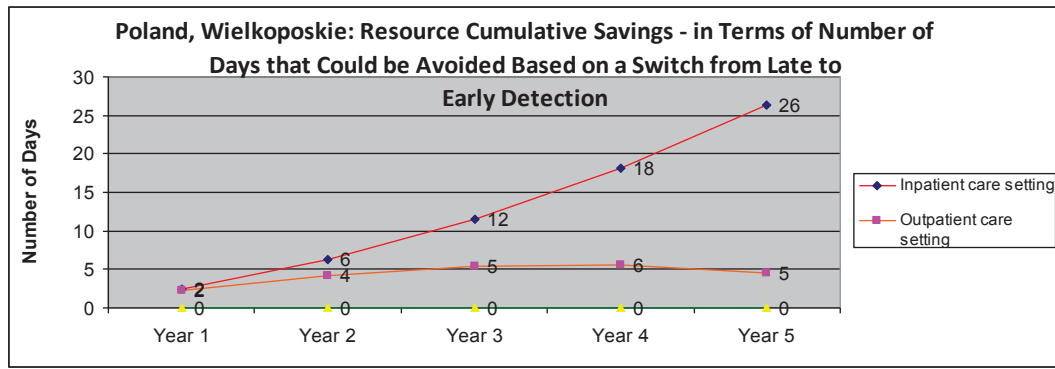
**Fig CLXII. Poland, Wielkoposkie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**



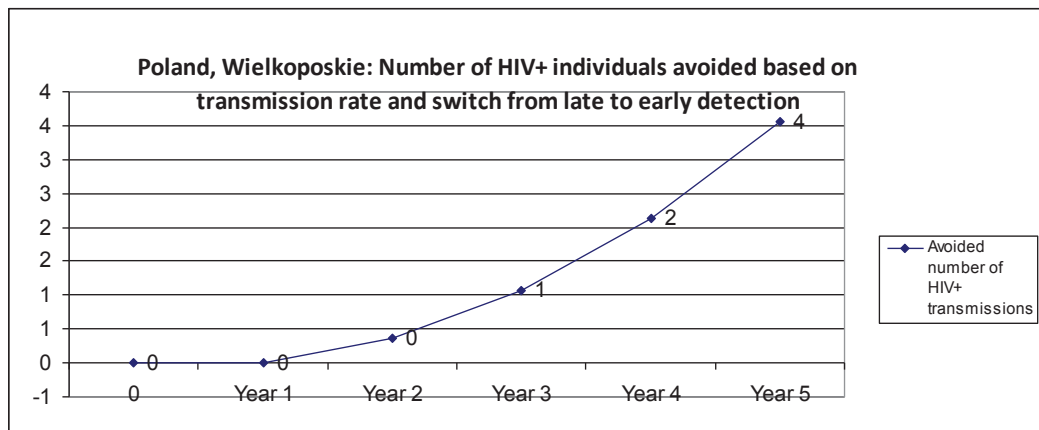
**Fig CLXIII. Poland, Wielkoposkie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**



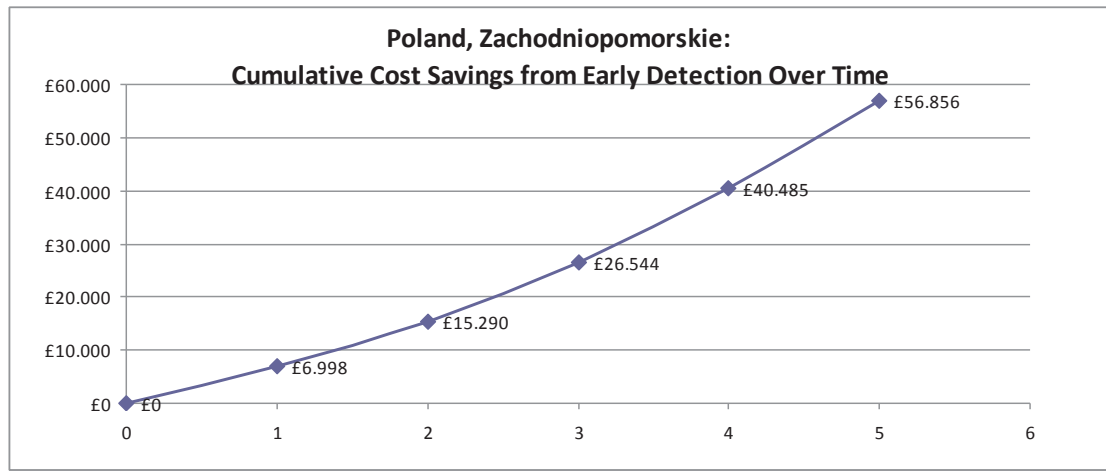
**Fig CLXIV. Poland, Wielkoposkie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



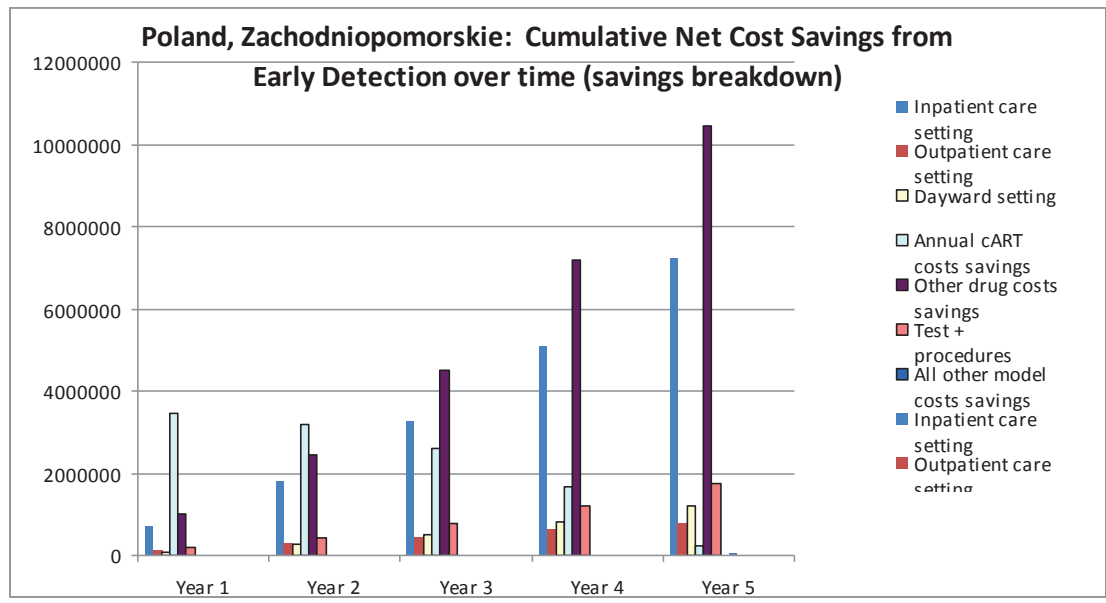
**Fig CLXV. Poland, Wielkoposkie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



**Fig CLXVI. Poland, Zachodniopomorskie: Financial impact of future versus current scenario with 30% relative shift towards early HIV detection**

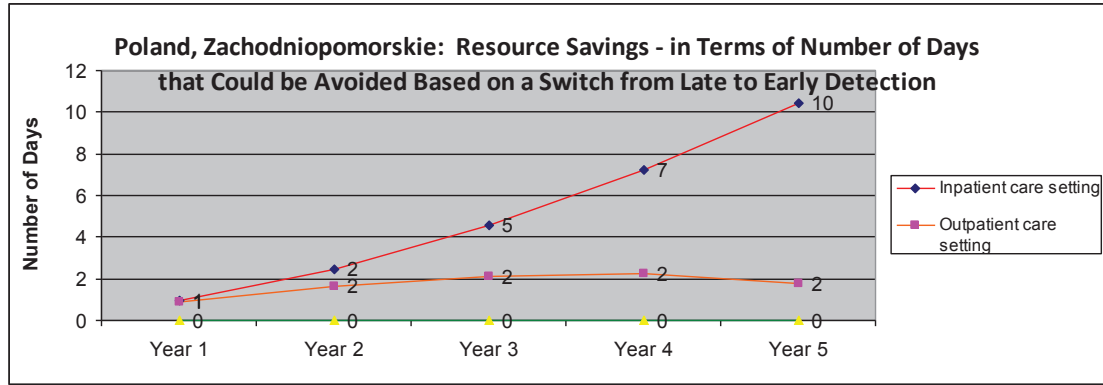


**Fig CLXVII. Poland, Zachodniopomorskie: Cumulative net cost savings breakdown with 30% relative shift towards early HIV detection**

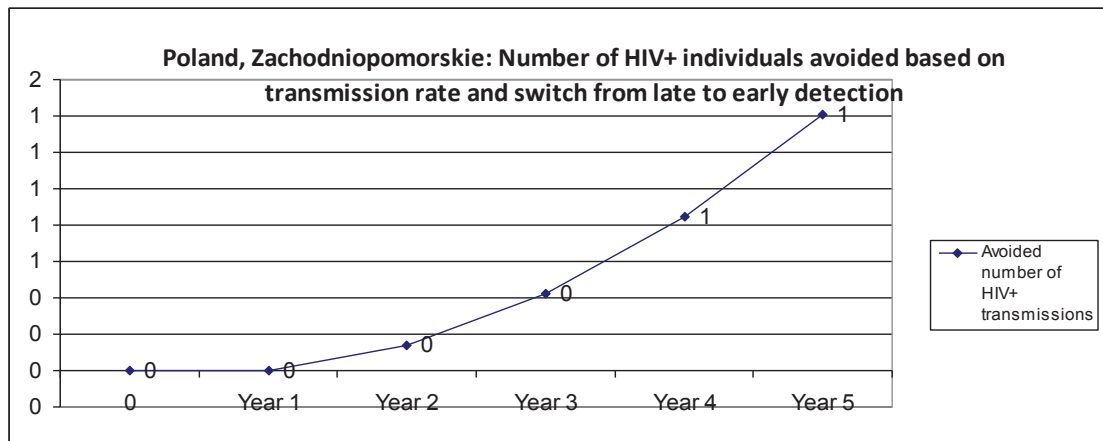




**Fig CLXVIII. Poland, Zachodniopomorskie: Cumulative resource savings (number of days avoided) with 30% relative shift towards early HIV detection**



**Fig CLXIX. Poland, Wielkoposkie: Difference between proposed (30% relative shift towards early HIV detection) versus current scenario**



## Tables

**Table I. Survival data by stage of presentation**

A- Poland

	Age group: 15-49		Age group: 50+	
Year	S(t) Early	S(t) Late	S(t) Early	S(t) Late
1	100.00%	100.00%	100.00%	100.00%
2	99.61%	97.53%	99.17%	94.07%
3	99.21%	95.12%	98.36%	88.28%
4	98.82%	92.77%	97.57%	82.64%
5	98.43%	90.48%	96.80%	77.15%

B - UK

	Age group: 15-49		Age group: 50+	
Year	S(t) Early	S(t) Late	S(t) Early	S(t) Late
1	100.00%	100.00%	100.00%	100.00%
2	99.65%	97.73%	99.24%	94.55%
3	99.31%	95.51%	98.49%	89.22%
4	98.97%	93.34%	97.76%	84.02%
5	98.62%	91.22%	97.05%	78.94%

**Table II Annual costs by category according to early versus late HIV diagnosis (Poland, 2013)**

**A Treatment costs in year 1 by diagnosis category**

Cost category	Early detection	Late detection	Difference
Mean inpatient care	276.05 zł.	2,484.41 zł.	2,208.36 zł.
Mean outpatient care	2,701.28 zł.	3,177.98 zł.	476.70 zł.
Mean day patient costs*	0.00 zł.	0.00 zł.	0.00 zł.
Average annual ART costs	1,050.00 zł.	3,496.50 zł.	2,446.50 zł.
Other drug costs	631.05 zł.	1,786.05 zł.	1,155.00 zł.
Tests & procedures	66.62 zł.	95.24 zł.	28.61 zł.
Total	4,725.00 zł.	11,040.17 zł.	6,315.17 zł.

\* Polish system encompasses dayward clinics (day patient cost) under the outpatient care.  
ART –Antiretroviral Therapy

**B Treatment costs from year 2 onwards by diagnosis category**

Cost category	Early detection	Late detection	Difference
Mean inpatient care	1,380.23 zł.	2,760.45 zł.	1,380.23 zł.
Mean outpatient care	3,177.98 zł.	3,177.98 zł.	0.00 zł.
Mean day patient costs*	0.00 zł.	0.00 zł.	0.00 zł.
Average annual cART costs	2,625.00 zł.	3,496.50 zł.	871.50 zł.
Other drug costs	948.68 zł.	1,918.61 zł.	969.94 zł.
Tests & procedures	78.49 zł.	99.23 zł.	20.74 zł.
Total	8,210.37 zł.	11,452.77 zł.	3,242.40 zł.

\* Polish system encompasses dayward clinics (day patient cost) under the outpatient care.  
cART –Combination Antiretroviral Therapy

**Table III. Annual costs by category according to early versus late HIV diagnosis (UK, 2013)**

**A Treatment costs in year 1 by diagnosis category**

Cost category	Early detection	Late detection	Difference
Mean inpatient care	£156.89	£1,056.66	£899.77
Mean outpatient care	£470.28	£629.07	£158.79
Mean day patient costs	£126.75	£238.13	£111.38
Average annual cART costs	£200.00	£4,491.74	£4,291.74
Other drug costs	£968.29	£2,299.04	£1,330.74
Tests & procedures	£345.23	£575.14	£229.90
<b>Total</b>	<b>£2,267.44</b>	<b>£9,289.78</b>	<b>£7,022.34</b>

cART – Combination Antiretroviral Therapy

**B Treatment costs from year 2 onwards by diagnosis category**

Cost category	Early detection	Late detection	Difference
Mean inpatient care	£528.33	£1,125.60	£597.27
Mean outpatient care	£538.35	£595.74	£57.39
Mean day patient costs	£253.49	£380.24	£126.75
Average annual cART costs	£4,617.55	£4,491.74	-£125.81
Other drug costs	£1,476.03	£2,406.88	£930.85
Tests & procedures	£432.85	£593.86	£161.00
<b>Total</b>	<b>£7,846.60</b>	<b>£9,594.06</b>	<b>£1,747.46</b>

cART – Combination Antiretroviral Therapy

**Table IV. Life Expectancy in HIV vs. general population**

Reference	Cohort/study name	Country of study	LE (Life Expectancy) in HIV-positive population	LE in general population
Nakagawa et al. [55]	Computer simulation (HIV Synthesis)	UK	LE at birth: 75.0 years if diagnosed with HIV with high CD4 count; 71.5 years if diagnosed with HIV with low CD4 count	LE at birth: estimated from model to be 82.0 years if not infected with HIV
The Antiretroviral Therapy Cohort Collaboration [50]	ART-CC	Multi-country study (Europe and North America)	LE at age 20: 43.1 years. LE at age 35: 31.7 years	Not stated
May et al. [49]	UK Collaborative HIV Cohort (CHIC) Study	UK	LE at age 20: 39.5 years in men; 50.2 years in women. LE at age 35: 30.1 years in men; 37.7 years in women	LE at age 20: 57.8 years in men; 61.6 years in women. LE at age 35: 43.5 years in men; 46.9 years in women

**Table V. Total cumulative annual cost: adjusted for HIV spread, survival and distribution of detection**

**Panel A – UK**

Total cumulative cost: adjusted for HIV spread, survival and distribution of detection						
Year	Original Distribution			Proposed Distribution (additional 30% relative switch to early detection)		
	Early Detected	Late Detected	Total	Early Detected	Late Detected	Early Detected
1	€ 7,338,627	€ 23,878,503	€ 31,217,130	€ 8,932,880	€ 16,714,952	€ 25,647,833
2	€ 61,405,170	€ 72,321,798	133,726,967	€ 74,744,913	€ 50,625,258	125,370,172
3	€	€	€	€	€	€
4	144,024,860	144,583,508	288,608,368	175,313,020	101,208,455	276,521,475
5	€	€	€	€	€	€
6	255,550,932	240,276,998	495,827,930	311,067,169	168,193,898	479,261,067
7	€	€	€	€	€	€
8	396,360,644	359,048,316	755,408,961	482,466,578	251,333,821	733,800,399

**Panel B – Poland**

Total cumulative cost: adjusted for HIV spread, survival and distribution of detection						
Year	Original Distribution			Proposed Distribution (additional 30% relative switch to early detection)		
	Early Detected	Late Detected	Total	Early Detected	Late Detected	Early Detected
1	€ 518,179	€ 1,031,378	€ 1,549,557	€ 650,603	€ 721,965	€ 1,372,567
2	€ 2,136,424	€ 3,109,033	€ 5,245,457	€ 2,682,399	€ 2,176,323	€ 4,858,723
3	€ 4,633,199	€ 6,184,728	€ 10,817,928	€ 5,817,239	€ 4,329,310	€ 10,146,549
4	€ 7,996,950	€ 10,225,502	€ 18,222,452	€ 10,040,615	€ 7,157,851	€ 17,198,466
5	€ 12,217,225	€ 15,200,767	€ 27,417,992	€ 15,339,405	€ 10,640,537	€ 25,979,941

Table VI: UK (All LHB), UK - Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>UK (All LHB):</b>							
<b>Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£693,830	£122,450	£85,889	£3,463,679	£1,026,166	£177,285	£5,569,298
2	£1,107,043	£151,001	£173,449	-£286,914	£1,403,709	£239,210	£2,787,498
3	£1,480,214	£167,186	£249,924	-£569,911	£2,057,555	£345,129	£3,730,097
4	£1,816,239	£172,172	£316,178	-£946,305	£2,679,718	£441,968	£4,479,969
5	£2,117,788	£167,029	£373,015	-	£3,270,542	£529,775	£5,041,699
<b>Total Savings:</b>							<b>£21,608,562</b>

Table VII: Wales (All LHB), UK - Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>Wales (All LHB):</b>							
<b>Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£18,092	£3,193	£2,240	£90,315	£26,757	£4,623	£145,219
2	£28,866	£3,937	£4,523	-£7,481	£36,602	£6,237	£72,684
3	£38,596	£4,359	£6,517	-£14,860	£53,650	£8,999	£97,262
4	£47,358	£4,489	£8,244	-£24,675	£69,873	£11,524	£116,815
5	£55,221	£4,355	£9,726	-£36,934	£85,279	£13,814	£131,462
<b>Total Savings:</b>							<b>£563,440</b>

Table VIII: Northern Ireland (All LHB) - Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>Northern Ireland (All LHB): Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£8.823	£1.557	£1.092	£44.045	£13.049	£2.254	£70.820
2	£14.077	£1.920	£2.206	-£3.648	£17.850	£3.042	£35.446
3	£18.823	£2.126	£3.178	-£7.247	£26.164	£4.389	£47.432
4	£23.096	£2.189	£4.021	-£12.033	£34.076	£5.620	£56.968
5	£26.930	£2.124	£4.743	-£18.012	£41.589	£6.737	£64.111
<b>Total Savings:</b>							<b>£274.778</b>

Table IX: Scotland (All LHB) - Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>Scotland (All LHB): Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£30.261	£5.341	£3.746	£151.065	£44.755	£7.732	£242.899
2	£48.283	£6.586	£7.565	-£12.513	£61.221	£10.433	£121.574
3	£64.558	£7.292	£10.900	-£24.856	£89.738	£15.052	£162.684
4	£79.213	£7.509	£13.790	-£41.272	£116.873	£19.276	£195.389
5	£92.365	£7.285	£16.269	-£61.777	£142.641	£23.106	£219.889
<b>Total Savings:</b>							<b>£942.435</b>

Table X: England (All LHB) - Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England (All LHB): Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£681.035	£120.192	£84.305	£3.399.807	£1.007.243	£174.015	£5.466.598
<b>2</b>	£1.086.629	£148.216	£170.251	£-281.623	£1.377.824	£234.799	£2.736.095
<b>3</b>	£1.452.918	£164.103	£245.316	£-559.402	£2.019.613	£338.765	£3.661.313
<b>4</b>	£1.782.747	£168.997	£310.347	£-928.855	£2.630.303	£433.818	£4.397.357
<b>5</b>	£2.078.735	£163.949	£366.137	- £1.390.330	£3.210.232	£520.005	£4.948.728
<b>Total Savings:</b>							<b>£21.210.092</b>



Table XI: England - Derbyshire And Nottinghamshire Area Team - Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Derbyshire And Nottinghamshire Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.797	£5.788	£4.060	£163.728	£48.507	£8.380	£263.261
<b>2</b>	£52.330	£7.138	£8.199	-£13.562	£66.353	£11.307	£131.765
<b>3</b>	£69.970	£7.903	£11.814	-£26.940	£97.261	£16.314	£176.322
<b>4</b>	£85.854	£8.139	£14.946	-£44.732	£126.670	£20.892	£211.768
<b>5</b>	£100.108	£7.895	£17.632	-£66.956	£154.599	£25.042	£238.321
<b>Total Savings:</b>							<b>£1.021.437</b>

Table XII: England - Leicestershire And Lincolnshire Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Leicestershire And Lincolnshire Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.952	£5.815	£4.079	£164.499	£48.735	£8.420	£264.500
<b>2</b>	£52.576	£7.171	£8.238	-£13.626	£66.666	£11.361	£132.385
<b>3</b>	£70.299	£7.940	£11.870	-£27.067	£97.719	£16.391	£177.152
<b>4</b>	£86.258	£8.177	£15.016	-£44.942	£127.267	£20.990	£212.765
<b>5</b>	£100.579	£7.933	£17.715	-£67.271	£155.326	£25.160	£239.443
<b>Total Savings:</b>							<b>£1.026.246</b>

Table XIII: England - East Anglia Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - East Anglia Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.771	£5.784	£4.057	£163.595	£48.468	£8.373	£263.047
<b>2</b>	£52.287	£7.132	£8.192	-£13.551	£66.300	£11.298	£131.658
<b>3</b>	£69.913	£7.896	£11.804	-£26.918	£97.182	£16.301	£176.179
<b>4</b>	£85.784	£8.132	£14.934	-£44.696	£126.568	£20.875	£211.596
<b>5</b>	£100.027	£7.889	£17.618	-£66.901	£154.473	£25.022	£238.128
<b>Total Savings:</b>							<b>£1.020.609</b>

Table XIV: England - Hertfordshire And The South Midlands Area Team:  
Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Hertfordshire And The South Midlands Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Daywar d setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedure s</b>	<b>Total savings per annum</b>
<b>1</b>	£32.694	£5.770	£4.047	£163.214	£48.355	£8.354	£262.435
<b>2</b>	£52.166	£7.115	£8.173	-£13.520	£66.145	£11.272	£131.352
<b>3</b>	£69.750	£7.878	£11.777	-£26.855	£96.955	£16.263	£175.768
<b>4</b>	£85.584	£8.113	£14.899	-£44.591	£126.273	£20.826	£211.104
<b>5</b>	£99.794	£7.871	£17.577	-£66.745	£154.113	£24.964	£237.573
<b>Total Savings:</b>							<b>£1,018,231</b>

Table XV: England - Essex Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Essex Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.925	£5.811	£4.076	£164.366	£48.696	£8.413	£264.286
<b>2</b>	£52.534	£7.166	£8.231	-£13.615	£66.612	£11.352	£132.278
<b>3</b>	£70.242	£7.934	£11.860	-£27.045	£97.640	£16.378	£177.009
<b>4</b>	£86.188	£8.170	£15.004	-£44.906	£127.164	£20.973	£212.593
<b>5</b>	£100.498	£7.926	£17.701	-£67.216	£155.201	£25.140	£239.250
<b>Total Savings:</b>							<b>£1.025.416</b>

Table XVI: England - London North East And Central: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - London North East And Central: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Daywar d setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedure s</b>	<b>Total savings per annum</b>
<b>1</b>	£33.009	£5.826	£4.086	£164.787	£48.821	£8.434	£264.963
<b>2</b>	£52.668	£7.184	£8.252	-£13.650	£66.782	£11.381	£132.617
<b>3</b>	£70.422	£7.954	£11.890	-£27.114	£97.890	£16.420	£177.462
<b>4</b>	£86.409	£8.191	£15.042	-£45.021	£127.489	£21.027	£213.137
<b>5</b>	£100.755	£7.947	£17.746	-£67.389	£155.598	£25.204	£239.862
<b>Total Savings:</b>							<b>£1.028.041</b>

Table XVII: England - London South: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - London South: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Daywar d setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedure s</b>	<b>Total savings per annum</b>
<b>1</b>	£32.815	£5.791	£4.062	£163.819	£48.534	£8.385	£263.407
<b>2</b>	£52.359	£7.142	£8.203	-£13.570	£66.390	£11.314	£131.838
<b>3</b>	£70.008	£7.907	£11.820	-£26.955	£97.315	£16.323	£176.419
<b>4</b>	£85.901	£8.143	£14.954	-£44.757	£126.740	£20.903	£211.885
<b>5</b>	£100.163	£7.900	£17.642	-£66.993	£154.684	£25.056	£238.453
<b>Total Savings:</b>							<b>£1.022.003</b>

Table XVIII: England - London North West: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - London North West: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.954	£5.816	£4.079	£164.509	£48.738	£8.420	£264.517
<b>2</b>	£52.580	£7.172	£8.238	-£13.627	£66.670	£11.361	£132.394
<b>3</b>	£70.304	£7.941	£11.870	-£27.068	£97.725	£16.392	£177.163
<b>4</b>	£86.263	£8.177	£15.017	-£44.945	£127.275	£20.992	£212.779
<b>5</b>	£100.586	£7.933	£17.717	-£67.275	£155.336	£25.162	£239.458
<b>Total Savings:</b>							<b>£1.026.311</b>



Table XIX: England - Devon, Cornwall And Isles Of Scilly Area Team:  
Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Devon, Cornwall And Isles Of Scilly Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.757	£5.781	£4.055	£163.528	£48.448	£8.370	£262.939
<b>2</b>	£52.266	£7.129	£8.189	-£13.546	£66.272	£11.294	£131.604
<b>3</b>	£69.884	£7.893	£11.800	-£26.907	£97.142	£16.294	£176.107
<b>4</b>	£85.749	£8.129	£14.927	-£44.677	£126.516	£20.866	£211.510
<b>5</b>	£99.986	£7.886	£17.611	-£66.874	£154.410	£25.012	£238.030
<b>Total Savings:</b>							<b>£1.020.190</b>

Table XX: England – Cumbria, Northumberland, Tyne And Wear Area Team:  
Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Cumbria, Northumberland, Tyne And Wear Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.936	£5.813	£4.077	£164.419	£48.712	£8.416	£264.372
<b>2</b>	£52.551	£7.168	£8.234	−£13.620	£66.633	£11.355	£132.321
<b>3</b>	£70.265	£7.936	£11.864	−£27.053	£97.671	£16.383	£177.066
<b>4</b>	£86.216	£8.173	£15.009	−£44.921	£127.205	£20.980	£212.662
<b>5</b>	£100.531	£7.929	£17.707	−£67.238	£155.251	£25.148	£239.327
<b>Total Savings:</b>							<b>£1.025.750</b>

Table XXI: England – Lancashire Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Lancashire Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.882	£5.803	£4.070	£164.148	£48.631	£8.402	£263.936
<b>2</b>	£52.464	£7.156	£8.220	-£13.597	£66.524	£11.336	£132.103
<b>3</b>	£70.149	£7.923	£11.844	-£27.009	£97.510	£16.356	£176.774
<b>4</b>	£86.074	£8.159	£14.984	-£44.847	£126.995	£20.945	£212.312
<b>5</b>	£100.365	£7.916	£17.678	-£67.127	£154.995	£25.107	£238.933
<b>Total Savings:</b>							<b>£1.024.058</b>

Table XXII: England – Greater Manchester Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Greater Manchester Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.944	£5.814	£4.078	£164.458	£48.723	£8.418	£264.435
<b>2</b>	£52.563	£7.170	£8.236	-£13.623	£66.649	£11.358	£132.353
<b>3</b>	£70.282	£7.938	£11.867	-£27.060	£97.695	£16.387	£177.108
<b>4</b>	£86.237	£8.175	£15.012	-£44.931	£127.235	£20.985	£212.713
<b>5</b>	£100.554	£7.931	£17.711	-£67.254	£155.288	£25.154	£239.384
<b>Total Savings:</b>							<b>£1.025.993</b>

Table XXIII: England - Cheshire, Warrington And Wirral Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Cheshire, Warrington And Wirral Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.888	£5.804	£4.071	£164.179	£48.640	£8.403	£263.985
<b>2</b>	£52.474	£7.157	£8.222	-£13.600	£66.536	£11.339	£132.128
<b>3</b>	£70.162	£7.925	£11.846	-£27.014	£97.528	£16.359	£176.807
<b>4</b>	£86.090	£8.161	£14.987	-£44.855	£127.019	£20.949	£212.351
<b>5</b>	£100.383	£7.917	£17.681	-£67.140	£155.024	£25.111	£238.977
<b>Total Savings:</b>							<b>£1.024.248</b>

Table XXIV: England – Merseyside Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Merseyside Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.813	£5.791	£4.062	£163.807	£48.530	£8.384	£263.387
<b>2</b>	£52.355	£7.141	£8.203	-£13.569	£66.385	£11.313	£131.828
<b>3</b>	£70.003	£7.907	£11.820	-£26.953	£97.307	£16.322	£176.406
<b>4</b>	£85.895	£8.142	£14.953	-£44.753	£126.731	£20.902	£211.870
<b>5</b>	£100.156	£7.899	£17.641	-£66.988	£154.673	£25.054	£238.435
<b>Total Savings:</b>							<b>£1.021.926</b>

Table XXV: England – Kent And Medway Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Kent And Medway Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.646	£5.762	£4.041	£162.973	£48.283	£8.342	£262.047
<b>2</b>	£52.089	£7.105	£8.161	-£13.500	£66.047	£11.255	£131.158
<b>3</b>	£69.647	£7.866	£11.759	-£26.816	£96.812	£16.239	£175.509
<b>4</b>	£85.458	£8.101	£14.877	-£44.526	£126.086	£20.796	£210.792
<b>5</b>	£99.646	£7.859	£17.551	-£66.647	£153.886	£24.927	£237.222
<b>Total Savings:</b>							<b>£1.016.727</b>

Table XXVI: England – Bath, Gloucestershire, Swindon And Wiltshire Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Bath, Gloucestershire, Swindon And Wiltshire Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.961	£5.817	£4.080	£164.546	£48.749	£8.422	£264.576
<b>2</b>	£52.591	£7.173	£8.240	-£13.630	£66.685	£11.364	£132.424
<b>3</b>	£70.319	£7.942	£11.873	-£27.074	£97.747	£16.396	£177.203
<b>4</b>	£86.283	£8.179	£15.020	-£44.955	£127.303	£20.996	£212.827
<b>5</b>	£100.608	£7.935	£17.721	-£67.290	£155.371	£25.168	£239.512
<b>Total Savings:</b>							<b>£1.026.542</b>



Table XXVII: England – Bristol, North Somerset, Somerset And South Gloucestershire Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Bristol, North Somerset, Somerset And South Gloucestershire Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Daywar d setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedure s</b>	<b>Total savings per annum</b>
<b>1</b>	£32.816	£5.792	£4.062	£163.822	£48.535	£8.385	£263.411
<b>2</b>	£52.360	£7.142	£8.204	-£13.570	£66.391	£11.314	£131.840
<b>3</b>	£70.010	£7.907	£11.821	-£26.955	£97.316	£16.324	£176.423
<b>4</b>	£85.903	£8.143	£14.954	-£44.757	£126.743	£20.904	£211.889
<b>5</b>	£100.165	£7.900	£17.643	-£66.994	£154.687	£25.057	£238.458
<b>Total Savings:</b>							<b>£1.022.021</b>

Table XXVIII: England – Birmingham And The Black Country Area Team:  
 Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Birmingham And The Black Country Area Team:                      Annual net cost savings from 30% relative shift to early HIV detection</b>							
Year	Inpatient care setting	Outpatient care setting	Dayward setting	Annual cART costs savings	Other drug costs savings	Test + procedures	Total savings per annum
1	£32.847	£5.797	£4.066	£163.978	£48.581	£8.393	£263.663
2	£52.410	£7.149	£8.211	-£13.583	£66.455	£11.325	£131.966
3	£70.077	£7.915	£11.832	-£26.981	£97.409	£16.339	£176.591
4	£85.985	£8.151	£14.969	-£44.800	£126.864	£20.924	£212.092
5	£100.261	£7.908	£17.659	-£67.058	£154.835	£25.081	£238.685
<b>Total Savings:</b>							<b>£1.022.998</b>

Table XXIX: England – Arden, Herefordshire And Worcestershire Area Team:  
Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – Birmingham And The Black Country Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.951	£5.815	£4.079	£164.494	£48.734	£8.419	£264.492
<b>2</b>	£52.575	£7.171	£8.237	-£13.626	£66.664	£11.360	£132.381
<b>3</b>	£70.297	£7.940	£11.869	-£27.066	£97.716	£16.391	£177.147
<b>4</b>	£86.255	£8.177	£15.016	-£44.941	£127.263	£20.990	£212.759
<b>5</b>	£100.576	£7.932	£17.715	-£67.269	£155.322	£25.160	£239.436
<b>Total Savings:</b>							<b>£1.026.215</b>

Table XXX: England – Shropshire And Staffordshire Area Team:  
 Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England - Shropshire And Staffordshire Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£32.930	£5.812	£4.076	£164.388	£48.702	£8.414	£264.322
<b>2</b>	£52.541	£7.167	£8.232	-£13.617	£66.621	£11.353	£132.296
<b>3</b>	£70.252	£7.935	£11.862	-£27.048	£97.653	£16.380	£177.033
<b>4</b>	£86.200	£8.171	£15.006	-£44.912	£127.181	£20.976	£212.622
<b>5</b>	£100.512	£7.927	£17.704	-£67.226	£155.222	£25.143	£239.282
<b>Total Savings:</b>							<b>£1.025.556</b>

Table XXXI: England – North Yorkshire And Humber Area Team: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

<b>England – North Yorkshire And Humber Area Team: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£33.067	£5.836	£4.093	£165.074	£48.906	£8.449	£265.425
<b>2</b>	£52.760	£7.196	£8.266	-£13.674	£66.899	£11.400	£132.848
<b>3</b>	£70.545	£7.968	£11.911	-£27.161	£98.060	£16.448	£177.771
<b>4</b>	£86.559	£8.205	£15.069	-£45.100	£127.712	£21.064	£213.509
<b>5</b>	£100.931	£7.960	£17.777	-£67.506	£155.870	£25.248	£240.280
<b>Total Savings:</b>							<b>£1.029.834</b>

Table XXXII: Poland, Dolnoslaskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Dolnoslaskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	40.942 z <sup>3</sup>	8.838 z <sup>3</sup>	0 z <sup>3</sup>	45.357 z <sup>3</sup>	21.413 z <sup>3</sup>	530 z <sup>3</sup>	117.081 z <sup>3</sup>
<b>2</b>	63.945 z <sup>3</sup>	7.319 z <sup>3</sup>	0 z <sup>3</sup>	31.190 z <sup>3</sup>	35.561 z <sup>3</sup>	735 z <sup>3</sup>	138.749 z <sup>3</sup>
<b>3</b>	84.795 z <sup>3</sup>	4.617 z <sup>3</sup>	0 z <sup>3</sup>	45.097 z <sup>3</sup>	52.735 z <sup>3</sup>	1.052 z <sup>3</sup>	188.295 z <sup>3</sup>
<b>4</b>	103.649 z <sup>3</sup>	860 z <sup>3</sup>	0 z <sup>3</sup>	57.891 z <sup>3</sup>	69.517 z <sup>3</sup>	1.336 z <sup>3</sup>	233.254 z <sup>3</sup>
<b>5</b>	120.653 z <sup>3</sup>	-3.835 z <sup>3</sup>	0 z <sup>3</sup>	69.583 z <sup>3</sup>	85.920 z <sup>3</sup>	1.587 z <sup>3</sup>	273.909 z <sup>3</sup>
<b>Total Savings:</b>							<b>951.288 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Dolnoslaskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£7.799	£1.683	£0	£8.639	£4.079	£101	£22.301
<b>2</b>	£12.180	£1.394	£0	£5.941	£6.773	£140	£26.428
<b>3</b>	£16.151	£879	£0	£8.590	£10.045	£200	£35.866
<b>4</b>	£19.743	£164	£0	£11.027	£13.241	£255	£44.429
<b>5</b>	£22.981	-£730	£0	£13.254	£16.366	£302	£52.173
<b>Total Savings:</b>							<b>£181.198</b>

Table XXXIII: Poland, Kujawsko-pomorskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

Poland, Kujawsko-pomorskie: Annual net cost savings from 30% relative shift to early HIV detection							
Year	Inpatient care setting	Outpatient care setting	Dayward setting	Annual cART costs savings	Other drug costs savings	Test + procedures	Total savings per annum
1	11.383 z <sup>3</sup>	2.457 z <sup>3</sup>	0 z <sup>3</sup>	12.611 z <sup>3</sup>	5.954 z <sup>3</sup>	147 z <sup>3</sup>	32.552 z <sup>3</sup>
2	17.779 z <sup>3</sup>	2.035 z <sup>3</sup>	0 z <sup>3</sup>	8.672 z <sup>3</sup>	9.887 z <sup>3</sup>	204 z <sup>3</sup>	38.576 z <sup>3</sup>
3	23.575 z <sup>3</sup>	1.284 z <sup>3</sup>	0 z <sup>3</sup>	12.538 z <sup>3</sup>	14.662 z <sup>3</sup>	293 z <sup>3</sup>	52.352 z <sup>3</sup>
4	28.818 z <sup>3</sup>	239 z <sup>3</sup>	0 z <sup>3</sup>	16.095 z <sup>3</sup>	19.328 z <sup>3</sup>	372 z <sup>3</sup>	64.852 z <sup>3</sup>
5	33.545 z <sup>3</sup>	-1.066 z <sup>3</sup>	0 z <sup>3</sup>	19.346 z <sup>3</sup>	23.888 z <sup>3</sup>	441 z <sup>3</sup>	76.155 z <sup>3</sup>
<b>Total Savings:</b>							<b>264.486 z<sup>3</sup></b>

Panel B – GBP

Poland, Kujawsko-pomorskie: Annual net cost savings from 30% relative shift to early HIV detection							
Year	Inpatient care setting	Outpatient care setting	Dayward setting	Annual cART costs savings	Other drug costs savings	Test + procedures	Total savings per annum
1	£2.168	£468	£0	£2.402	£1.134	£28	£6.200
2	£3.386	£388	£0	£1.652	£1.883	£39	£7.348
3	£4.491	£245	£0	£2.388	£2.793	£56	£9.972
4	£5.489	£46	£0	£3.066	£3.681	£71	£12.353
5	£6.390	-£203	£0	£3.685	£4.550	£84	£14.506
<b>Total Savings:</b>							<b>£50.378</b>

Table XXXIV: Poland, Lubelskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Lubelskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	13.180 z <sup>3</sup>	2.845 z <sup>3</sup>	0 z <sup>3</sup>	14.602 z <sup>3</sup>	6.894 z <sup>3</sup>	171 z <sup>3</sup>	37.692 z <sup>3</sup>
2	20.586 z <sup>3</sup>	2.356 z <sup>3</sup>	0 z <sup>3</sup>	10.041 z <sup>3</sup>	11.448 z <sup>3</sup>	237 z <sup>3</sup>	44.667 z <sup>3</sup>
3	27.298 z <sup>3</sup>	1.486 z <sup>3</sup>	0 z <sup>3</sup>	14.518 z <sup>3</sup>	16.977 z <sup>3</sup>	339 z <sup>3</sup>	60.618 z <sup>3</sup>
4	33.368 z <sup>3</sup>	277 z <sup>3</sup>	0 z <sup>3</sup>	18.637 z <sup>3</sup>	22.380 z <sup>3</sup>	430 z <sup>3</sup>	75.091 z <sup>3</sup>
5	38.842 z <sup>3</sup>	-1.234 z <sup>3</sup>	0 z <sup>3</sup>	22.401 z <sup>3</sup>	27.660 z <sup>3</sup>	511 z <sup>3</sup>	88.179 z <sup>3</sup>
<b>Total Savings:</b>							<b>306.247 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Lubelskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£2.511	£542	£0	£2.781	£1.313	£33	£7.179
2	£3.921	£449	£0	£1.913	£2.181	£45	£8.508
3	£5.200	£283	£0	£2.765	£3.234	£65	£11.546
4	£6.356	£53	£0	£3.550	£4.263	£82	£14.303
5	£7.398	-£235	£0	£4.267	£5.269	£97	£16.796
<b>Total Savings:</b>							<b>£58.333</b>



Table XXXV: Poland, Lubuskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Lubuskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	7.189 z <sup>3</sup>	1.552 z <sup>3</sup>	0 z <sup>3</sup>	7.965 z <sup>3</sup>	3.760 z <sup>3</sup>	93 z <sup>3</sup>	20.559 z <sup>3</sup>
<b>2</b>	11.229 z <sup>3</sup>	1.285 z <sup>3</sup>	0 z <sup>3</sup>	5.477 z <sup>3</sup>	6.244 z <sup>3</sup>	129 z <sup>3</sup>	24.364 z <sup>3</sup>
<b>3</b>	14.890 z <sup>3</sup>	811 z <sup>3</sup>	0 z <sup>3</sup>	7.919 z <sup>3</sup>	9.260 z <sup>3</sup>	185 z <sup>3</sup>	33.064 z <sup>3</sup>
<b>4</b>	18.201 z <sup>3</sup>	151 z <sup>3</sup>	0 z <sup>3</sup>	10.165 z <sup>3</sup>	12.207 z <sup>3</sup>	235 z <sup>3</sup>	40.959 z <sup>3</sup>
<b>5</b>	21.186 z <sup>3</sup>	-673 z <sup>3</sup>	0 z <sup>3</sup>	12.219 z <sup>3</sup>	15.087 z <sup>3</sup>	279 z <sup>3</sup>	48.098 z <sup>3</sup>
<b>Total Savings:</b>							<b>167.044 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Lubuskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£1.369	£296	£0	£1.517	£716	£18	£3.916
<b>2</b>	£2.139	£245	£0	£1.043	£1.189	£25	£4.641
<b>3</b>	£2.836	£154	£0	£1.508	£1.764	£35	£6.298
<b>4</b>	£3.467	£29	£0	£1.936	£2.325	£45	£7.802
<b>5</b>	£4.035	-£128	£0	£2.327	£2.874	£53	£9.161
<b>Total Savings:</b>							<b>£31.818</b>

Table XXXVI: Poland, Lodzkie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Lodzkie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	11.683 z <sup>3</sup>	2.522 z <sup>3</sup>	0 z <sup>3</sup>	12.943 z <sup>3</sup>	6.110 z <sup>3</sup>	151 z <sup>3</sup>	33.409 z <sup>3</sup>
<b>2</b>	18.246 z <sup>3</sup>	2.088 z <sup>3</sup>	0 z <sup>3</sup>	8.900 z <sup>3</sup>	10.147 z <sup>3</sup>	210 z <sup>3</sup>	39.591 z <sup>3</sup>
<b>3</b>	24.196 z <sup>3</sup>	1.317 z <sup>3</sup>	0 z <sup>3</sup>	12.868 z <sup>3</sup>	15.048 z <sup>3</sup>	300 z <sup>3</sup>	53.729 z <sup>3</sup>
<b>4</b>	29.576 z <sup>3</sup>	246 z <sup>3</sup>	0 z <sup>3</sup>	16.519 z <sup>3</sup>	19.836 z <sup>3</sup>	381 z <sup>3</sup>	66.558 z <sup>3</sup>
<b>5</b>	34.428 z <sup>3</sup>	-1.094 z <sup>3</sup>	0 z <sup>3</sup>	19.855 z <sup>3</sup>	24.517 z <sup>3</sup>	453 z <sup>3</sup>	78.159 z <sup>3</sup>
<b>Total Savings:</b>							<b>271.447 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Lodzkie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£2.225	£480	£0	£2.465	£1.164	£29	£6.364
<b>2</b>	£3.476	£398	£0	£1.695	£1.933	£40	£7.541
<b>3</b>	£4.609	£251	£0	£2.451	£2.866	£57	£10.234
<b>4</b>	£5.634	£47	£0	£3.146	£3.778	£73	£12.678
<b>5</b>	£6.558	-£208	£0	£3.782	£4.670	£86	£14.887
<b>Total Savings:</b>							<b>£51.704</b>

Table XXXVII: Poland, Malopolskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Malopolskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	17.374 z <sup>3</sup>	3.750 z <sup>3</sup>	0 z <sup>3</sup>	19.248 z <sup>3</sup>	9.087 z <sup>3</sup>	225 z <sup>3</sup>	49.685 z <sup>3</sup>
<b>2</b>	27.136 z <sup>3</sup>	3.106 z <sup>3</sup>	0 z <sup>3</sup>	13.236 z <sup>3</sup>	15.091 z <sup>3</sup>	312 z <sup>3</sup>	58.880 z <sup>3</sup>
<b>3</b>	35.984 z <sup>3</sup>	1.959 z <sup>3</sup>	0 z <sup>3</sup>	19.137 z <sup>3</sup>	22.379 z <sup>3</sup>	447 z <sup>3</sup>	79.905 z <sup>3</sup>
<b>4</b>	43.985 z <sup>3</sup>	365 z <sup>3</sup>	0 z <sup>3</sup>	24.567 z <sup>3</sup>	29.500 z <sup>3</sup>	567 z <sup>3</sup>	98.984 z <sup>3</sup>
<b>5</b>	51.200 z <sup>3</sup>	-1.627 z <sup>3</sup>	0 z <sup>3</sup>	29.528 z <sup>3</sup>	36.461 z <sup>3</sup>	673 z <sup>3</sup>	116.236 z <sup>3</sup>
<b>Total Savings:</b>							<b>403.690 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Malopolskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£3.309	£714	£0	£3.666	£1.731	£43	£9.464
<b>2</b>	£5.169	£592	£0	£2.521	£2.874	£59	£11.215
<b>3</b>	£6.854	£373	£0	£3.645	£4.263	£85	£15.220
<b>4</b>	£8.378	£70	£0	£4.679	£5.619	£108	£18.854
<b>5</b>	£9.752	-£310	£0	£5.624	£6.945	£128	£22.140
<b>Total Savings:</b>							<b>£76.893</b>

Table XXXVIII: Poland, Mazowieckie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Mazowieckie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	68.299 z <sup>3</sup>	14.743 z <sup>3</sup>	0 z <sup>3</sup>	75.664 z <sup>3</sup>	35.721 z <sup>3</sup>	885 z <sup>3</sup>	195.312 z <sup>3</sup>
2	106.671 z <sup>3</sup>	12.209 z <sup>3</sup>	0 z <sup>3</sup>	52.030 z <sup>3</sup>	59.322 z <sup>3</sup>	1.227 z <sup>3</sup>	231.458 z <sup>3</sup>
3	141.453 z <sup>3</sup>	7.702 z <sup>3</sup>	0 z <sup>3</sup>	75.229 z <sup>3</sup>	87.971 z <sup>3</sup>	1.756 z <sup>3</sup>	314.110 z <sup>3</sup>
4	172.906 z <sup>3</sup>	1.435 z <sup>3</sup>	0 z <sup>3</sup>	96.572 z <sup>3</sup>	115.967 z <sup>3</sup>	2.229 z <sup>3</sup>	389.109 z <sup>3</sup>
5	201.270 z <sup>3</sup>	-6.397 z <sup>3</sup>	0 z <sup>3</sup>	116.077 z <sup>3</sup>	143.330 z <sup>3</sup>	2.647 z <sup>3</sup>	456.929 z <sup>3</sup>
<b>Total Savings:</b>							<b>1.586.918 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Mazowieckie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£13.009	£2.808	£0	£14.412	£6.804	£169	£37.202
2	£20.318	£2.325	£0	£9.910	£11.299	£234	£44.087
3	£26.943	£1.467	£0	£14.329	£16.756	£334	£59.831
4	£32.934	£273	£0	£18.395	£22.089	£425	£74.116
5	£38.337	-£1.218	£0	£22.110	£27.301	£504	£87.034
<b>Total Savings:</b>							<b>£302.270</b>

Table XXXIX: Poland, Opolskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Opolskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	6.590 z <sup>3</sup>	1.423 z <sup>3</sup>	0 z <sup>3</sup>	7.301 z <sup>3</sup>	3.447 z <sup>3</sup>	85 z <sup>3</sup>	18.846 z <sup>3</sup>
<b>2</b>	10.293 z <sup>3</sup>	1.178 z <sup>3</sup>	0 z <sup>3</sup>	5.020 z <sup>3</sup>	5.724 z <sup>3</sup>	118 z <sup>3</sup>	22.334 z <sup>3</sup>
<b>3</b>	13.649 z <sup>3</sup>	743 z <sup>3</sup>	0 z <sup>3</sup>	7.259 z <sup>3</sup>	8.488 z <sup>3</sup>	169 z <sup>3</sup>	30.309 z <sup>3</sup>
<b>4</b>	16.684 z <sup>3</sup>	138 z <sup>3</sup>	0 z <sup>3</sup>	9.318 z <sup>3</sup>	11.190 z <sup>3</sup>	215 z <sup>3</sup>	37.546 z <sup>3</sup>
<b>5</b>	19.421 z <sup>3</sup>	-617 z <sup>3</sup>	0 z <sup>3</sup>	11.200 z <sup>3</sup>	13.830 z <sup>3</sup>	255 z <sup>3</sup>	44.090 z <sup>3</sup>
<b>Total Savings:</b>							<b>153.124 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Opolskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£1.255	£271	£0	£1.391	£657	£16	£3.590
<b>2</b>	£1.961	£224	£0	£956	£1.090	£23	£4.254
<b>3</b>	£2.600	£142	£0	£1.383	£1.617	£32	£5.773
<b>4</b>	£3.178	£26	£0	£1.775	£2.131	£41	£7.152
<b>5</b>	£3.699	-£118	£0	£2.133	£2.634	£49	£8.398
<b>Total Savings:</b>							<b>£29.166</b>

Table XL: Poland, Podkarpackie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Podkarpackie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	9.286 z <sup>3</sup>	2.005 z <sup>3</sup>	0 z <sup>3</sup>	10.288 z <sup>3</sup>	4.857 z <sup>3</sup>	120 z <sup>3</sup>	26.556 z <sup>3</sup>
<b>2</b>	14.504 z <sup>3</sup>	1.660 z <sup>3</sup>	0 z <sup>3</sup>	7.074 z <sup>3</sup>	8.066 z <sup>3</sup>	167 z <sup>3</sup>	31.470 z <sup>3</sup>
<b>3</b>	19.233 z <sup>3</sup>	1.047 z <sup>3</sup>	0 z <sup>3</sup>	10.229 z <sup>3</sup>	11.961 z <sup>3</sup>	239 z <sup>3</sup>	42.708 z <sup>3</sup>
<b>4</b>	23.509 z <sup>3</sup>	195 z <sup>3</sup>	0 z <sup>3</sup>	13.130 z <sup>3</sup>	15.767 z <sup>3</sup>	303 z <sup>3</sup>	52.905 z <sup>3</sup>
<b>5</b>	27.366 z <sup>3</sup>	-870 z <sup>3</sup>	0 z <sup>3</sup>	15.782 z <sup>3</sup>	19.488 z <sup>3</sup>	360 z <sup>3</sup>	62.126 z <sup>3</sup>
<b>Total Savings:</b>							<b>215.765 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Podkarpackie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£1.769	£382	£0	£1.960	£925	£23	£5.058
<b>2</b>	£2.763	£316	£0	£1.347	£1.536	£32	£5.994
<b>3</b>	£3.663	£199	£0	£1.948	£2.278	£45	£8.135
<b>4</b>	£4.478	£37	£0	£2.501	£3.003	£58	£10.077
<b>5</b>	£5.213	-£166	£0	£3.006	£3.712	£69	£11.834
<b>Total Savings:</b>							<b>£41.098</b>

Table XLI: Poland, Podlaskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Podlaskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	5.092 z <sup>3</sup>	1.099 z <sup>3</sup>	0 z <sup>3</sup>	5.642 z <sup>3</sup>	2.663 z <sup>3</sup>	66 z <sup>3</sup>	14.563 z <sup>3</sup>
2	7.954 z <sup>3</sup>	910 z <sup>3</sup>	0 z <sup>3</sup>	3.879 z <sup>3</sup>	4.423 z <sup>3</sup>	91 z <sup>3</sup>	17.258 z <sup>3</sup>
3	10.547 z <sup>3</sup>	574 z <sup>3</sup>	0 z <sup>3</sup>	5.609 z <sup>3</sup>	6.559 z <sup>3</sup>	131 z <sup>3</sup>	23.421 z <sup>3</sup>
4	12.892 z <sup>3</sup>	107 z <sup>3</sup>	0 z <sup>3</sup>	7.201 z <sup>3</sup>	8.647 z <sup>3</sup>	166 z <sup>3</sup>	29.013 z <sup>3</sup>
5	15.007 z <sup>3</sup>	-477 z <sup>3</sup>	0 z <sup>3</sup>	8.655 z <sup>3</sup>	10.687 z <sup>3</sup>	197 z <sup>3</sup>	34.069 z <sup>3</sup>
<b>Total Savings:</b>							<b>118.323 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Podlaskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
1	£970	£209	£0	£1.075	£507	£13	£2.774
2	£1.515	£173	£0	£739	£842	£17	£3.287
3	£2.009	£109	£0	£1.068	£1.249	£25	£4.461
4	£2.456	£20	£0	£1.372	£1.647	£32	£5.526
5	£2.858	-£91	£0	£1.649	£2.036	£38	£6.489
<b>Total Savings:</b>							<b>£22.538</b>

Table XLII: Poland, Pomorskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Pomorskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	13.180 z <sup>3</sup>	2.845 z <sup>3</sup>	0 z <sup>3</sup>	14.602 z <sup>3</sup>	6.894 z <sup>3</sup>	171 z <sup>3</sup>	37.692 z <sup>3</sup>
<b>2</b>	20.586 z <sup>3</sup>	2.356 z <sup>3</sup>	0 z <sup>3</sup>	10.041 z <sup>3</sup>	11.448 z <sup>3</sup>	237 z <sup>3</sup>	44.667 z <sup>3</sup>
<b>3</b>	27.298 z <sup>3</sup>	1.486 z <sup>3</sup>	0 z <sup>3</sup>	14.518 z <sup>3</sup>	16.977 z <sup>3</sup>	339 z <sup>3</sup>	60.618 z <sup>3</sup>
<b>4</b>	33.368 z <sup>3</sup>	277 z <sup>3</sup>	0 z <sup>3</sup>	18.637 z <sup>3</sup>	22.380 z <sup>3</sup>	430 z <sup>3</sup>	75.091 z <sup>3</sup>
<b>5</b>	38.842 z <sup>3</sup>	-1.234 z <sup>3</sup>	0 z <sup>3</sup>	22.401 z <sup>3</sup>	27.660 z <sup>3</sup>	511 z <sup>3</sup>	88.179 z <sup>3</sup>
<b>Total Savings:</b>							<b>306.247 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Pomorskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£2.511	£542	£0	£2.781	£1.313	£33	£7.179
<b>2</b>	£3.921	£449	£0	£1.913	£2.181	£45	£8.508
<b>3</b>	£5.200	£283	£0	£2.765	£3.234	£65	£11.546
<b>4</b>	£6.356	£53	£0	£3.550	£4.263	£82	£14.303
<b>5</b>	£7.398	-£235	£0	£4.267	£5.269	£97	£16.796
<b>Total Savings:</b>							<b>£58.333</b>

Table XLIII: Poland, Slaskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty



<b>Poland, Slaskie:</b>							
<b>Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	36.845 z <sup>3</sup>	7.953 z <sup>3</sup>	0 z <sup>3</sup>	40.819 z <sup>3</sup>	19.271 z <sup>3</sup>	477 z <sup>3</sup>	105.366 z <sup>3</sup>
<b>2</b>	57.546 z <sup>3</sup>	6.586 z <sup>3</sup>	0 z <sup>3</sup>	28.069 z <sup>3</sup>	32.003 z <sup>3</sup>	662 z <sup>3</sup>	124.865 z <sup>3</sup>
<b>3</b>	76.310 z <sup>3</sup>	4.155 z <sup>3</sup>	0 z <sup>3</sup>	40.584 z <sup>3</sup>	47.458 z <sup>3</sup>	947 z <sup>3</sup>	169.454 z <sup>3</sup>
<b>4</b>	93.278 z <sup>3</sup>	774 z <sup>3</sup>	0 z <sup>3</sup>	52.098 z <sup>3</sup>	62.561 z <sup>3</sup>	1.202 z <sup>3</sup>	209.914 z <sup>3</sup>
<b>5</b>	108.580 z <sup>3</sup>	-3.451 z <sup>3</sup>	0 z <sup>3</sup>	62.621 z <sup>3</sup>	77.323 z <sup>3</sup>	1.428 z <sup>3</sup>	246.501 z <sup>3</sup>
<b>Total Savings:</b>							<b>856.101 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Slaskie:</b>							
<b>Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£7.018	£1.515	£0	£7.775	£3.671	£91	£20.070
<b>2</b>	£10.961	£1.255	£0	£5.346	£6.096	£126	£23.784
<b>3</b>	£14.535	£791	£0	£7.730	£9.040	£180	£32.277
<b>4</b>	£17.767	£147	£0	£9.923	£11.916	£229	£39.984
<b>5</b>	£20.682	-£657	£0	£11.928	£14.728	£272	£46.953
<b>Total Savings:</b>							<b>£163.067</b>

Table XLIV: Poland, Swietokrzyskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Swietokrzyskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	4.493 z <sup>3</sup>	970 z <sup>3</sup>	0 z <sup>3</sup>	4.978 z <sup>3</sup>	2.350 z <sup>3</sup>	58 z <sup>3</sup>	12.849 z <sup>3</sup>
<b>2</b>	7.018 z <sup>3</sup>	803 z <sup>3</sup>	0 z <sup>3</sup>	3.423 z <sup>3</sup>	3.903 z <sup>3</sup>	81 z <sup>3</sup>	15.227 z <sup>3</sup>
<b>3</b>	9.306 z <sup>3</sup>	507 z <sup>3</sup>	0 z <sup>3</sup>	4.949 z <sup>3</sup>	5.788 z <sup>3</sup>	116 z <sup>3</sup>	20.665 z <sup>3</sup>
<b>4</b>	11.375 z <sup>3</sup>	94 z <sup>3</sup>	0 z <sup>3</sup>	6.353 z <sup>3</sup>	7.629 z <sup>3</sup>	147 z <sup>3</sup>	25.599 z <sup>3</sup>
<b>5</b>	13.241 z <sup>3</sup>	-421 z <sup>3</sup>	0 z <sup>3</sup>	7.637 z <sup>3</sup>	9.430 z <sup>3</sup>	174 z <sup>3</sup>	30.061 z <sup>3</sup>
<b>Total Savings:</b>							<b>104.403 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Swietokrzyskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£856	£185	£0	£948	£448	£11	£2.448
<b>2</b>	£1.337	£153	£0	£652	£743	£15	£2.900
<b>3</b>	£1.773	£97	£0	£943	£1.102	£22	£3.936
<b>4</b>	£2.167	£18	£0	£1.210	£1.453	£28	£4.876
<b>5</b>	£2.522	-£80	£0	£1.455	£1.796	£33	£5.726
<b>Total Savings:</b>							<b>£19.886</b>

Table XLV: Poland, Warminsko-mazurskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Warminsko-mazurskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	7.189 z <sup>3</sup>	1.552 z <sup>3</sup>	0 z <sup>3</sup>	7.965 z <sup>3</sup>	3.760 z <sup>3</sup>	93 z <sup>3</sup>	20.559 z <sup>3</sup>
<b>2</b>	11.229 z <sup>3</sup>	1.285 z <sup>3</sup>	0 z <sup>3</sup>	5.477 z <sup>3</sup>	6.244 z <sup>3</sup>	129 z <sup>3</sup>	24.364 z <sup>3</sup>
<b>3</b>	14.890 z <sup>3</sup>	811 z <sup>3</sup>	0 z <sup>3</sup>	7.919 z <sup>3</sup>	9.260 z <sup>3</sup>	185 z <sup>3</sup>	33.064 z <sup>3</sup>
<b>4</b>	18.201 z <sup>3</sup>	151 z <sup>3</sup>	0 z <sup>3</sup>	10.165 z <sup>3</sup>	12.207 z <sup>3</sup>	235 z <sup>3</sup>	40.959 z <sup>3</sup>
<b>5</b>	21.186 z <sup>3</sup>	-673 z <sup>3</sup>	0 z <sup>3</sup>	12.219 z <sup>3</sup>	15.087 z <sup>3</sup>	279 z <sup>3</sup>	48.098 z <sup>3</sup>
<b>Total Savings:</b>							<b>167.044 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Warminsko-mazurskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£1.369	£296	£0	£1.517	£716	£18	£3.916
<b>2</b>	£2.139	£245	£0	£1.043	£1.189	£25	£4.641
<b>3</b>	£2.836	£154	£0	£1.508	£1.764	£35	£6.298
<b>4</b>	£3.467	£29	£0	£1.936	£2.325	£45	£7.802
<b>5</b>	£4.035	-£128	£0	£2.327	£2.874	£53	£9.161
<b>Total Savings:</b>							<b>£31.818</b>

Table XLVI: Poland, Wielkoposkie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection

Panel A - Polish Zloty

<b>Poland, Wielkoposkie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	32.352 z <sup>3</sup>	6.984 z <sup>3</sup>	0 z <sup>3</sup>	35.841 z <sup>3</sup>	16.921 z <sup>3</sup>	419 z <sup>3</sup>	92.516 z <sup>3</sup>
<b>2</b>	50.528 z <sup>3</sup>	5.783 z <sup>3</sup>	0 z <sup>3</sup>	24.646 z <sup>3</sup>	28.100 z <sup>3</sup>	581 z <sup>3</sup>	109.638 z <sup>3</sup>
<b>3</b>	67.004 z <sup>3</sup>	3.648 z <sup>3</sup>	0 z <sup>3</sup>	35.635 z <sup>3</sup>	41.671 z <sup>3</sup>	832 z <sup>3</sup>	148.789 z <sup>3</sup>
<b>4</b>	81.903 z <sup>3</sup>	680 z <sup>3</sup>	0 z <sup>3</sup>	45.745 z <sup>3</sup>	54.932 z <sup>3</sup>	1.056 z <sup>3</sup>	184.315 z <sup>3</sup>
<b>5</b>	95.339 z <sup>3</sup>	-3.030 z <sup>3</sup>	0 z <sup>3</sup>	54.984 z <sup>3</sup>	67.893 z <sup>3</sup>	1.254 z <sup>3</sup>	216.440 z <sup>3</sup>
<b>Total Savings:</b>							<b>751.698 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Wielkoposkie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£6.162	£1.330	£0	£6.827	£3.223	£80	£17.622
<b>2</b>	£9.624	£1.102	£0	£4.694	£5.352	£111	£20.883
<b>3</b>	£12.763	£695	£0	£6.788	£7.937	£158	£28.341
<b>4</b>	£15.600	£129	£0	£8.713	£10.463	£201	£35.108
<b>5</b>	£18.160	-£577	£0	£10.473	£12.932	£239	£41.227
<b>Total Savings:</b>							<b>£143.181</b>

**Table XLVII: Poland, Zachodniopomorskie: Total Annual Cost Savings due to 30-percent relative shift from Late to Early Detection**

Panel A - Polish Zloty

<b>Poland, Zachodniopomorskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	12.847 z <sup>3</sup>	2.773 z <sup>3</sup>	0 z <sup>3</sup>	14.232 z <sup>3</sup>	6.719 z <sup>3</sup>	166 z <sup>3</sup>	36.737 z <sup>3</sup>
<b>2</b>	20.064 z <sup>3</sup>	2.296 z <sup>3</sup>	0 z <sup>3</sup>	9.787 z <sup>3</sup>	11.158 z <sup>3</sup>	231 z <sup>3</sup>	43.536 z <sup>3</sup>
<b>3</b>	26.607 z <sup>3</sup>	1.449 z <sup>3</sup>	0 z <sup>3</sup>	14.150 z <sup>3</sup>	16.547 z <sup>3</sup>	330 z <sup>3</sup>	59.083 z <sup>3</sup>
<b>4</b>	32.523 z <sup>3</sup>	270 z <sup>3</sup>	0 z <sup>3</sup>	18.165 z <sup>3</sup>	21.813 z <sup>3</sup>	419 z <sup>3</sup>	73.190 z <sup>3</sup>
<b>5</b>	37.858 z <sup>3</sup>	-1.203 z <sup>3</sup>	0 z <sup>3</sup>	21.834 z <sup>3</sup>	26.960 z <sup>3</sup>	498 z <sup>3</sup>	85.946 z <sup>3</sup>
<b>Total Savings:</b>							<b>298.492 z<sup>3</sup></b>

Panel B – GBP

<b>Poland, Zachodniopomorskie: Annual net cost savings from 30% relative shift to early HIV detection</b>							
<b>Year</b>	<b>Inpatient care setting</b>	<b>Outpatient care setting</b>	<b>Dayward setting</b>	<b>Annual cART costs savings</b>	<b>Other drug costs savings</b>	<b>Test + procedures</b>	<b>Total savings per annum</b>
<b>1</b>	£2.447	£528	£0	£2.711	£1.280	£32	£6.998
<b>2</b>	£3.822	£437	£0	£1.864	£2.125	£44	£8.293
<b>3</b>	£5.068	£276	£0	£2.695	£3.152	£63	£11.254
<b>4</b>	£6.195	£51	£0	£3.460	£4.155	£80	£13.941
<b>5</b>	£7.211	-£229	£0	£4.159	£5.135	£95	£16.371
<b>Total Savings:</b>							<b>£56.856</b>

# APPENDIX 1: Survival rate estimation using Multiple Linear Regression

## POLAND

Patients 0-49 age group: Early Detected

### Linear Regression: Poland, Patient age 0-49, early HIV detected.

#### Regression Statistics

<i>R</i>	0.9996
<i>R-Squared</i>	0.99919
<i>Adjusted R-Squared</i>	0.99919
<i>S</i>	0.01732
<i>MSE</i>	0.0021
<i>RMSE</i>	0.04583
<i>PRESS</i>	0.00248
<i>PRESS RMSE</i>	0.0176
<i>Predicted R-Squared</i>	0.99904
<i>N</i>	8

Median Ranks = 0.11275 \* YEAR

#### ANOVA

	<i>d.f.</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p-value</i>
<i>Regression</i>	1.	2.59314	2.59314	8,640.33333	4.39364E-12
<i>Residual</i>	7.	0.0021	0.0003		
<i>Total</i>	8.	2.59524			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>LCL</i>	<i>UCL</i>	<i>t Stat</i>	<i>p-value</i>	<i>H0 (5%)</i>	<i>VIF</i>	<i>TOL</i>
<b>Intercept</b>	0								
<b>YEAR</b>	0.11275	0.00121	0.10988	0.11561	92.95339	4.39364E-12	rejected	**	**

*T (5%)* 2.36462

*LCL - Lower limit of the 95% confidence interval*

*UCL - Upper limit of the 95% confidence interval*

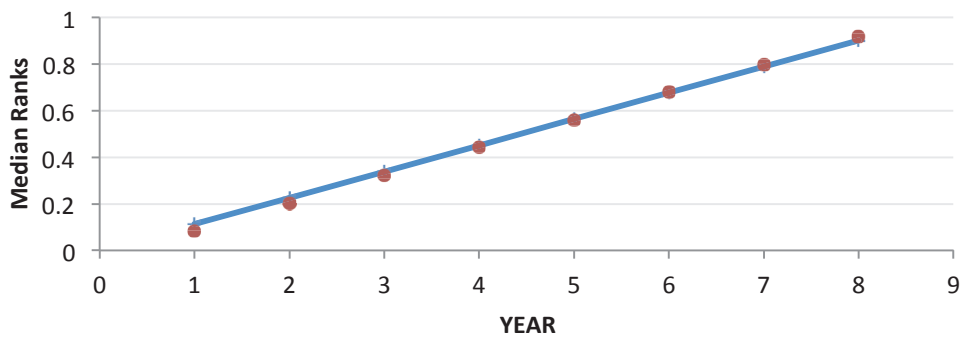
\*\* - Requires Pro version, please upgrade.

#### Residuals

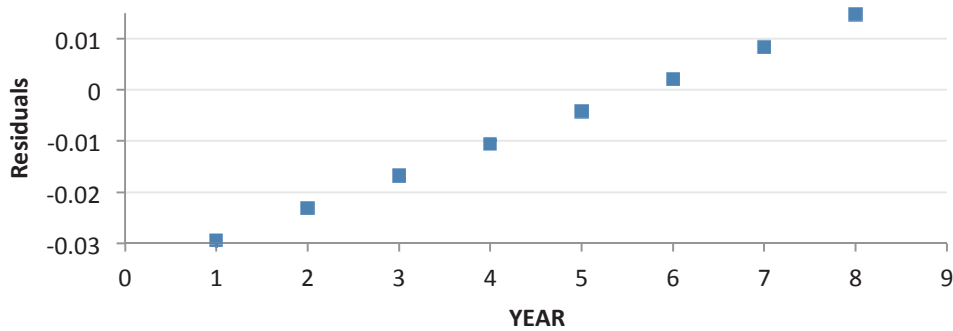
<i>Observation</i>	<i>Median Ranks</i>	<i>Predicted Y</i>	<i>Residual</i>	<i>Standardized [Excel]</i>	<i>Studentized</i>	<i>Deleted t</i>	<i>Leverage</i>	<i>Cook's D</i>	<i>DFIT</i>	<i>PRESS</i>
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1	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.01427	0.17933	-0.02956
2	0.20238	0.22549	0.02311	-1.02062	-1.51181	-1.70552	0.01961	0.0363	-0.2412	-0.02357
3	0.32143	0.33824	0.01681	-0.61237	-1.1135	-1.13645	0.04412	0.04544	0.24415	-0.01758
4	0.44048	0.45098	-0.0105	-0.20412	-0.70878	-0.68109	0.07843	0.03395	-0.1987	-0.0114
5	0.55952	0.56373	-0.0042	0.20412	-0.29055	-0.27063	0.12255	0.00936	0.10114	-0.00479
6	0.67857	0.67647	0.0021	0.61237	0.14996	0.13906	0.17647	0.00383	0.06437	0.00255
7	0.79762	0.78922	0.0084	1.02062	0.62447	0.59496	0.2402	0.0979	0.33452	0.01106
8	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
<i>Minimum</i>	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.00383	0.24415	-0.02956
<i>Maximum</i>	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
<i>Mean</i>	0.5	0.50735	0.00735	0.	-0.45127	-0.55408	0.125	0.09013	0.0292	-0.00648

**Scatter Diagram (Predicted Y, Median Ranks vs. YEAR )**



**Residuals vs YEAR**



**Weibull regression parameters**

0-49 AGE, Poland, Early Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1- Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0

99.61%	2	0.163461538	1.195402299	-1.72326315	-0.003956108
99.21%	3	0.259615385	1.350649351	-1.202023115	-0.007911595
98.82%	4	0.355769231	1.552238806	-0.821666515	-0.011866463
98.43%	5	0.451923077	1.824561404	-0.508595394	-0.015820709
98.04%	6	0.548076923	2.212765957	-0.230365445	-0.019774334
97.66%	7	0.644230769	2.810810811	0.032924962	-0.023727339
97.27%	8	0.740384615	3.851851852	0.299032932	-0.027679721

Patients 0-49 age group: Late Detected

**Linear Regression: Poland, Patient age 0-49, late HIV detected.**

**Regression Statistics**

R	0.9996
R-Squared	0.99919
Adjusted R-Squared	0.99919
S	0.01732
MSE	0.0021
RMSE	0.04583
PRESS	0.00248
PRESS RMSE	0.0176
Predicted R-Squared	0.99904
N	8

Median Ranks = 0.11275 \* YEAR

**ANOVA**

	d.f.	SS	MS	F	p-value
Regression	1.	2.59314	2.59314	8,640.33333	4.39364E-12
Residual	7.	0.0021	0.0003		
Total	8.	2.59524			

	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
Intercept	0								
YEAR	0.11275	0.00121	0.10988	0.11561	92.95339	4.39364E-12	rejected	**	**

T (5%) 2.36462

LCL - Lower limit of the 95% confidence interval

UCL - Upper limit of the 95% confidence interval

\*\* - Requires Pro version, please upgrade.

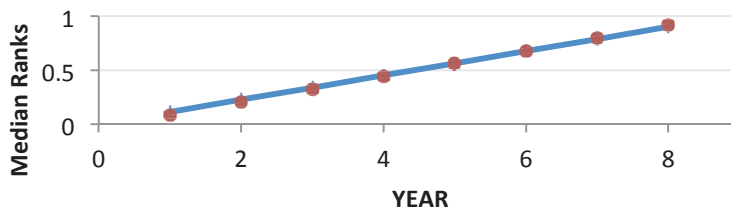
**Residuals**

Observation	Median Ranks	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.01427	0.17933	-0.02956
2	0.20238	0.22549	0.02311	-1.02062	-1.51181	-1.70552	0.01961	0.0363	-0.2412	-0.02357
3	0.32143	0.33824	0.01681	-0.61237	-1.1135	-1.13645	0.04412	0.04544	0.24415	-0.01758
4	0.44048	0.45098	-0.0105	-0.20412	-0.70878	-0.68109	0.07843	0.03395	-0.1987	-0.0114

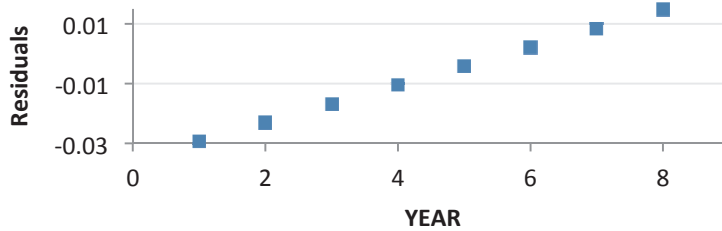


5	0.55952	0.56373	-0.0042	0.20412	-0.29055	-0.27063	0.12255	0.00936	0.10114	-0.00479
6	0.67857	0.67647	0.0021	0.61237	0.14996	0.13906	0.17647	0.00383	0.06437	0.00255
7	0.79762	0.78922	0.0084	1.02062	0.62447	0.59496	0.2402	0.0979	0.33452	0.01106
8	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
Minimum	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.00383	0.24415	-0.02956
Maximum	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
Mean	0.5	0.50735	0.00735	0.	-0.45127	-0.55408	0.125	0.09013	0.0292	-0.00648

**Scatter Diagram (Predicted Y, Median Ranks vs. YEAR )**



**Residuals vs YEAR**



**Weibull regression parameters**

0-49 AGE, Poland, Late Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1-Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0
97.53%	2	0.163461538	1.195402299	-1.72326315	-0.025034841
95.12%	3	0.259615385	1.350649351	-1.202023115	-0.050055715
92.77%	4	0.355769231	1.552238806	-0.821666515	-0.075062594
90.48%	5	0.451923077	1.824561404	-0.508595394	-0.100055447
88.25%	6	0.548076923	2.212765957	-0.230365445	-0.125034245
86.07%	7	0.644230769	2.810810811	0.032924962	-0.149998959
83.95%	8	0.740384615	3.851851852	0.299032932	-0.174949562

Patients 50+ age group: Early Detected

**Linear Regression: Poland, Patient age 50+, early HIV detected.**

**Regression Statistics**

R	0.9996
R-Squared	0.99919
Adjusted R-Squared	0.99919
S	0.01732
MSE	0.0021
RMSE	0.04583
PRESS	0.00248
PRESS RMSE	0.0176
Predicted R-Squared	0.99904
N	8

Median Ranks = 0.11275 \* YEAR

**ANOVA**

	d.f.	SS	MS	F	p-value
Regression	1.	2.59314	2.59314	8,640.33333	4.39364E-12
Residual	7.	0.0021	0.0003		
Total	8.	2.59524			

	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
Intercept	0								
YEAR	0.11275	0.00121	0.10988	0.11561	92.95339	4.39364E-12	rejected	**	**

T (5%) 2.36462

LCL - Lower limit of the 95% confidence interval

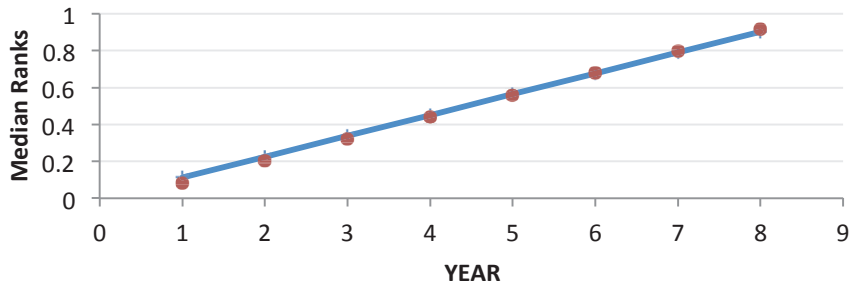
UCL - Upper limit of the 95% confidence interval

\*\* - Requires Pro version, please upgrade.

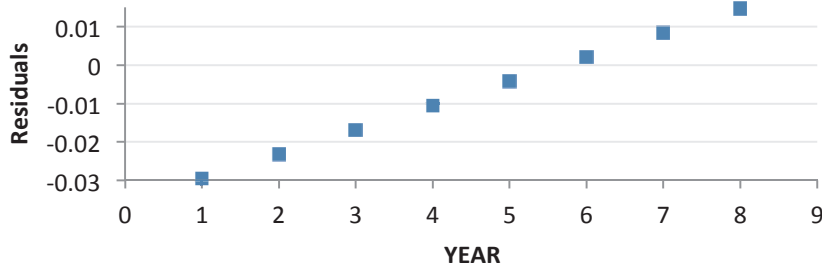
**Residuals**

Observation	Median Ranks	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.01427	0.17933	-0.02956
2	0.20238	0.22549	0.02311	-1.02062	-1.51181	-1.70552	0.01961	0.0363	-0.2412	-0.02357
3	0.32143	0.33824	0.01681	-0.61237	-1.1135	-1.13645	0.04412	0.04544	0.24415	-0.01758
4	0.44048	0.45098	-0.0105	-0.20412	-0.70878	-0.68109	0.07843	0.03395	-0.1987	-0.0114
5	0.55952	0.56373	-0.0042	0.20412	-0.29055	-0.27063	0.12255	0.00936	0.10114	-0.00479
6	0.67857	0.67647	0.0021	0.61237	0.14996	0.13906	0.17647	0.00383	0.06437	0.00255
7	0.79762	0.78922	0.0084	1.02062	0.62447	0.59496	0.2402	0.0979	0.33452	0.01106
8	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
Minimum	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.00383	0.24415	-0.02956
Maximum	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
Mean	0.5	0.50735	0.00735	0.	-0.45127	-0.55408	0.125	0.09013	0.0292	-0.00648

Scatter Diagram (Predicted Y, Median Ranks vs. YEAR )



Residuals vs YEAR



Weibull regression parameters

50+ AGE, Poland, Early Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1- Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0
99.17%	2	0.163461538	1.195402299	-1.72326315	-0.008341985
98.36%	3	0.259615385	1.350649351	-1.202023115	-0.016540768
97.57%	4	0.355769231	1.552238806	-0.821666515	-0.024597759
96.80%	5	0.451923077	1.824561404	-0.508595394	-0.032514394
96.05%	6	0.548076923	2.212765957	-0.230365445	-0.040292129
95.32%	7	0.644230769	2.810810811	0.032924962	-0.047932442
94.61%	8	0.740384615	3.851851852	0.299032932	-0.055436829

Patients 50+ age group: Late Detected

Linear Regression: Poland, Patient age 50+, late HIV detected.

**Regression Statistics**

R	0.9996
R-Squared	0.99919
Adjusted R-Squared	0.99919
S	0.01732
MSE	0.0021
RMSE	0.04583
PRESS	0.00248
PRESS RMSE	0.0176
Predicted R-Squared	0.99904
N	8

Median Ranks = 0.11275 \* YEAR

**ANOVA**

	d.f.	SS	MS	F	p-value
Regression	1.	2.59314	2.59314	8,640.33333	4.39364E-12
Residual	7.	0.0021	0.0003		
Total	8.	2.59524			

	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
Intercept	0								
YEAR	0.11275	0.00121	0.10988	0.11561	92.95339	4.39364E-12	rejected	**	**

T (5%) 2.36462

LCL - Lower limit of the 95% confidence interval

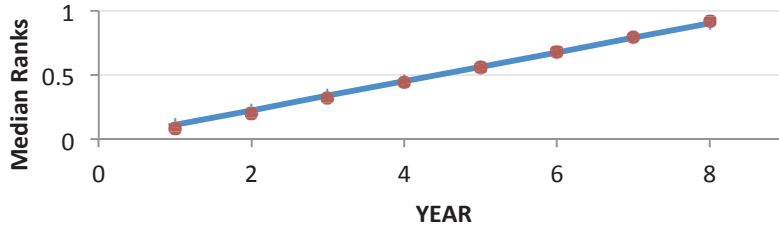
UCL - Upper limit of the 95% confidence interval

\*\* - Requires Pro version, please upgrade.

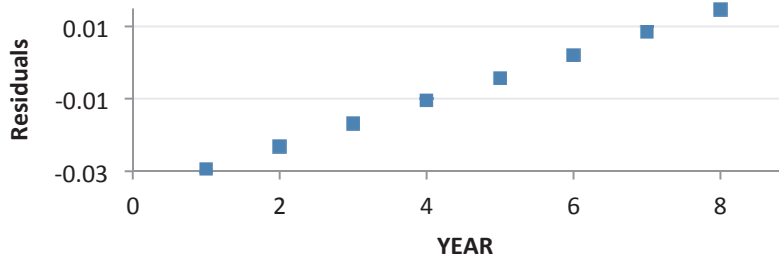
**Residuals**

Observation	Median Ranks	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.01427	0.17933	0.02956
2	0.20238	0.22549	0.02311	-1.02062	-1.51181	-1.70552	0.01961	0.0363	-0.2412	0.02357
3	0.32143	0.33824	0.01681	-0.61237	-1.1135	-1.13645	0.04412	0.04544	0.24415	0.01758
4	0.44048	0.45098	-0.0105	-0.20412	-0.70878	-0.68109	0.07843	0.03395	-0.1987	-0.0114
5	0.55952	0.56373	-0.0042	0.20412	-0.29055	-0.27063	0.12255	0.00936	0.10114	0.00479
6	0.67857	0.67647	0.0021	0.61237	0.14996	0.13906	0.17647	0.00383	0.06437	0.00255
7	0.79762	0.78922	0.0084	1.02062	0.62447	0.59496	0.2402	0.0979	0.33452	0.01106
8	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
Minimum	0.08333	0.11275	0.02941	-1.42887	-1.90985	-2.555	0.0049	0.00383	0.24415	0.02956
Maximum	0.91667	0.90196	0.01471	1.42887	1.14988	1.18206	0.31373	0.48	0.79922	0.02143
Mean	0.5	0.50735	0.00735	0.	-0.45127	-0.55408	0.125	0.09013	0.0292	0.00648

Scatter Diagram (Predicted Y, Median Ranks vs. YEAR )



Residuals vs YEAR



Weibull regression parameters

50+ AGE, Poland, Late Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1- Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0
94.07%	2	0.163461538	1.195402299	-1.72326315	-0.061171144
88.28%	3	0.259615385	1.350649351	-1.202023115	-0.124630067
82.64%	4	0.355769231	1.552238806	-0.821666515	-0.190621908
77.15%	5	0.451923077	1.824561404	-0.508595394	-0.259432349
71.79%	6	0.548076923	2.212765957	-0.230365445	-0.331397085
66.57%	7	0.644230769	2.810810811	0.032924962	-0.406914218
61.48%	8	0.740384615	3.851851852	0.299032932	-0.486460756

# UK

## Patients 0-49 age group: Early Detected Linear Regression: UK, Patient age 0-49, early HIV detected.

Regression Statistics	
R	0.92588
R-Squared	0.85726
Adjusted R-Squared	0.85726
S	0.40249
MSE	0.97198
RMSE	0.98589
PRESS	1.23127
PRESS RMSE	0.4194
Predicted R-Squared	0.81918
N	7

$1 = 0.16957 * 1$

ANOVA					
	d.f.	SS	MS	F	p-value
Regression	1.	5.8373	5.8373	36.03338	0.00096
Residual	6.	0.97198	0.162		
Total	7.	6.80928			

	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
Intercept	0								
1	0.16957	0.02825	0.10045	0.2387	6.00278	0.00096	rejected	**	**

T (5%) 2.44691

LCL - Lower limit of the 95% confidence interval

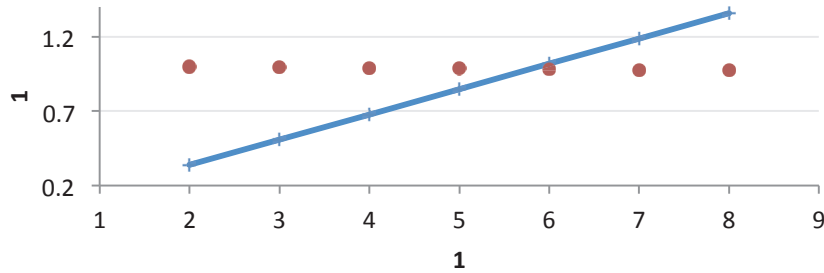
UCL - Upper limit of the 95% confidence interval

\*\* - Requires Pro version, please upgrade.

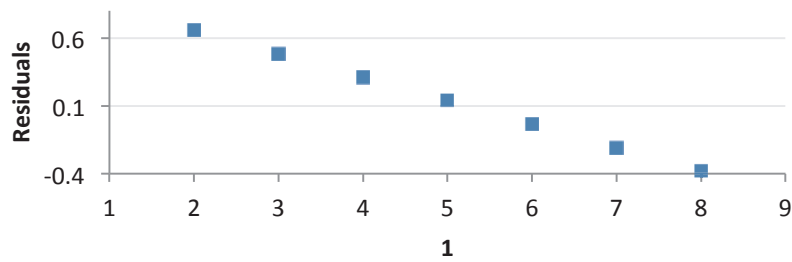
Residuals										
Observation	1	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.99654	0.33915	0.65739	1.38881	1.77673	2.35614	0.0197	0.0547	0.33405	0.67061
2	0.99309	0.50872	0.48437	0.92582	1.32587	1.43946	0.04433	0.07031	0.31004	0.50684
3	0.98966	0.67829	0.31136	0.46286	0.8681	0.84747	0.07882	0.05559	0.24789	0.338
4	0.98623	0.84787	0.13837	-0.00007	0.39541	0.36575	0.12315	0.01893	0.13707	0.1578
5	0.98282	1.01744	0.03462	-0.46296	-0.10213	0.09331	0.17734	0.00194	0.04332	0.04208
6	0.97943	1.18701	0.20759	-0.92582	-0.63777	-0.603	0.24138	0.11157	0.34014	0.27364
7	0.97604	1.35659	0.38055	-1.38865	-1.23062	1.29927	0.31527	0.60111	0.88162	0.55576
Minimum	0.97604	0.33915	0.38055	-1.38865	-1.23062	1.29927	0.0197	0.00194	0.88162	0.55576

Maximum	0.99654	1.35659	0.65739	1.38881	1.77673	2.35614	0.31527	0.60111	0.33405	0.67061
Mean	0.98626	0.84787	0.13839	0.	0.34223	0.43046	0.14286	0.13059	0.03372	0.11454

Scatter Diagram (Predicted Y, 1 vs. 1)



Residuals vs 1



Weibull regression parameters

0-49 AGE, UK, Early Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1-Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0
99.65%	2	0.163461538	1.195402299	-1.72326315	-0.003466
99.31%	3	0.259615385	1.350649351	-1.202023115	-0.006931477
98.97%	4	0.355769231	1.552238806	-0.821666515	-0.010396433
98.62%	5	0.451923077	1.824561404	-0.508595394	-0.013860866
98.28%	6	0.548076923	2.212765957	-0.230365445	-0.017324776
97.94%	7	0.644230769	2.810810811	0.032924962	-0.020788163
97.60%	8	0.740384615	3.851851852	0.299032932	-0.024251028

Patients 0-49 age group: Late Detected

**Linear Regression: UK, Patient age 0-49, late HIV detected.**

**Regression Statistics**

R	0.91049
R-Squared	0.82899
Adjusted R-Squared	0.82899
S	0.40834
MSE	1.00044
RMSE	1.00022
PRESS	1.26621
PRESS RMSE	0.42531
Predicted R-Squared	0.78356
N	7

**1 = 0.15457 \* 1**

**ANOVA**

	d.f.	SS	MS	F	p-value
Regression	1.	4.84976	4.84976	29.08572	0.00167
Residual	6.	1.00044	0.16674		
Total	7.	5.8502			

	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
<b>Intercept</b>	0								
<b>1</b>	0.15457	0.02866	0.08444	0.22469	5.39312	0.00167	rejected	**	**

T (5%) 2.44691

LCL - Lower limit of the 95% confidence interval

UCL - Upper limit of the 95% confidence interval

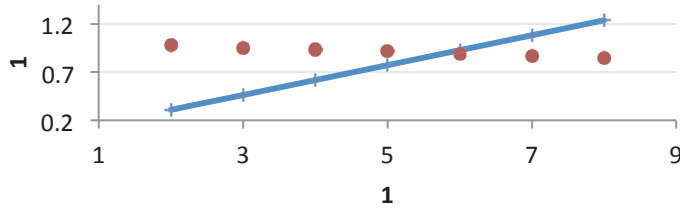
\*\* - Requires Pro version, please upgrade.

**Residuals**

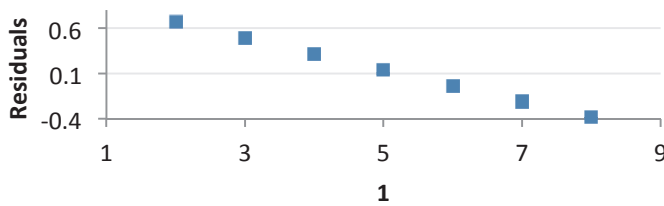
Observation	1	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.97728	0.30913	0.66815	1.39199	1.77994	2.36516	0.0197	0.0549	0.33532	0.68158
2	0.95509	0.4637	0.4914	0.92579	1.32584	1.4394	0.04433	0.0703	0.31003	0.5142
3	0.93342	0.61826	0.31516	0.46094	0.8661	0.84523	0.07882	0.05533	0.24724	0.34212
4	0.91225	0.77283	0.13942	-0.00259	0.39271	0.3632	0.12315	0.01867	0.13611	0.159
5	0.89157	0.92739	0.03583	-0.46482	-0.10418	0.09519	0.17734	0.00202	-0.0442	-0.04355
6	0.87136	1.08196	0.21059	-0.92579	-0.63774	0.60296	0.24138	0.11156	0.34012	-0.2776
7	0.85163	1.23652	0.38489	-1.38552	-1.22684	1.29395	0.31527	0.59743	0.87801	-0.56211
Minimum	0.85163	0.30913	0.38489	-1.38552	-1.22684	1.29395	0.0197	0.00202	0.87801	-0.56211
Maximum	0.97728	1.23652	0.66815	1.39199	1.77994	2.36516	0.31527	0.59743	0.33532	0.68158
Mean	0.91323	0.77283	0.1404	0.	0.34226	0.43155	0.14286	0.13003	0.03337	0.11624



Scatter Diagram (Predicted Y, 1 vs. 1 )



Residuals vs 1



Weibull regression parameters

0-49 AGE, UK, Late Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1-Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0
97.73%	2	0.163461538	1.195402299	-1.72326315	-0.022977983
95.51%	3	0.259615385	1.350649351	-1.202023115	-0.045944482
93.34%	4	0.355769231	1.552238806	-0.821666515	-0.068899472
91.22%	5	0.451923077	1.824561404	-0.508595394	-0.091842934
89.16%	6	0.548076923	2.212765957	-0.230365445	-0.114774844
87.14%	7	0.644230769	2.810810811	0.032924962	-0.13769518
85.16%	8	0.740384615	3.851851852	0.299032932	-0.160603923

Patients 50+ age group: Early Detected

**Linear Regression: UK, Patient age 50+, early HIV detected.**

Regression Statistics

R	0.923
R-Squared	0.85192
Adjusted R-Squared	0.85192
S	0.40356
MSE	0.97718
RMSE	0.98852

PRESS 1.23751  
 PRESS RMSE 0.42046  
 Predicted R-Squared 0.81248  
 N 7

$1 = 0.16642 * 1$

**ANOVA**

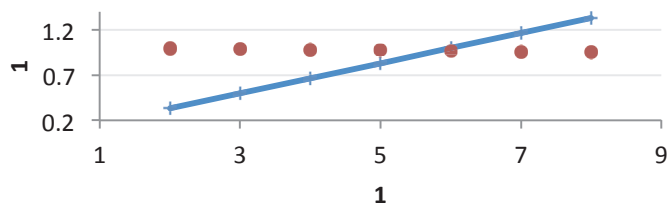
	d.f.	SS	MS	F	p-value
Regression	1.	5.62199	5.62199	34.51962	0.00108
Residual	6.	0.97718	0.16286		
Total	7.	6.59917			

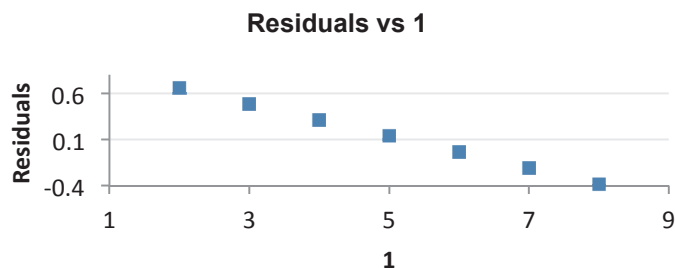
	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
Intercept	0								
1	0.16642	0.02832	0.09711	0.23572	5.87534	0.00108	rejected	**	**
T (5%)	2.44691								
LCL - Lower limit of the 95% confidence interval									
UCL - Upper limit of the 95% confidence interval									
** - Requires Pro version, please upgrade.									

**Residuals**

Observation	1	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.99237	0.33283	0.65953	1.38984	1.77777	2.35905	0.0197	0.05476	0.33446	0.67279
2	0.98491	0.49925	0.48566	0.92581	1.32586	1.43944	0.04433	0.0703	0.31004	0.50819
3	0.97763	0.66567	0.31196	0.46224	0.86745	0.84675	0.07882	0.0555	0.24768	0.33865
4	0.97052	0.83208	0.13843	-0.00088	0.39454	0.36493	0.12315	0.01885	0.13676	0.15787
5	0.96357	0.9985	0.03493	-0.46356	-0.10279	0.09392	0.17734	0.00196	0.04361	0.04246
6	0.95678	1.16492	0.20814	-0.92581	-0.63776	0.60299	0.24138	0.11157	0.34013	0.27436
7	0.95015	1.33133	0.38119	-1.38764	-1.2294	1.29756	0.31527	0.59992	0.88046	-0.5567
Minimum	0.95015	0.33283	0.38119	-1.38764	-1.2294	1.29756	0.0197	0.00196	0.88046	-0.5567
Maximum	0.99237	1.33133	0.65953	1.38984	1.77777	2.35905	0.31527	0.59992	0.33446	0.67279
Mean	0.97085	0.83208	0.13876	0.	0.34224	0.43081	0.14286	0.13041	0.03361	0.11486

**Scatter Diagram (Predicted Y, 1 vs. 1)**





Weibull regression parameters

50+ AGE, UK, Early Detected, Survival Cycles	YEAR	Median Ranks	1/(1-Median Rank)	ln(ln(1/(1-Median Rank)))	ln(Survival Cycles)
100.00%	1	0.067307692	1.072164948	-2.663843085	0
99.65%	2	0.163461538	1.195402299	-1.72326315	-0.003466
99.31%	3	0.259615385	1.350649351	-1.202023115	-0.006931477
98.97%	4	0.355769231	1.552238806	-0.821666515	-0.010396433
98.62%	5	0.451923077	1.824561404	-0.508595394	-0.013860866
98.28%	6	0.548076923	2.212765957	-0.230365445	-0.017324776
97.94%	7	0.644230769	2.810810811	0.032924962	-0.020788163
97.60%	8	0.740384615	3.851851852	0.299032932	-0.024251028

Patients 50+ age group: Late Detected

**Linear Regression: UK, Patient age 50+, late HIV detected.**

**Regression Statistics**

R	0.87431
R-Squared	0.76442
Adjusted R-Squared	0.76442
S	0.41841
MSE	1.05039
RMSE	1.02489
PRESS	1.32783
PRESS RMSE	0.43553
Predicted R-Squared	0.7022
N	7

$1 = 0.12958 * 1$

**ANOVA**

	d.f.	SS	MS	F	p-value
Regression	1.	3.40844	3.40844	19.46947	0.00451

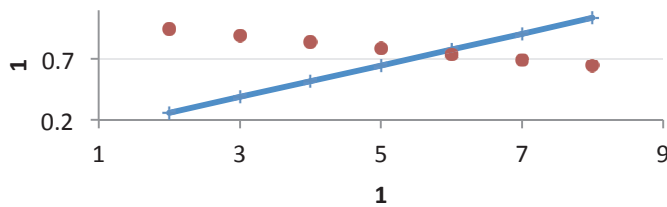
Residual	6.	1.05039	0.17507
Total	7.	4.45883	

	Coefficient	Standard Error	LCL	UCL	t Stat	p-value	H0 (5%)	VIF	TOL
Intercept	0								
1	0.12958	0.02937	0.05772	0.20143	4.41242	0.00451	rejected	**	**
T (5%)	2.44691								

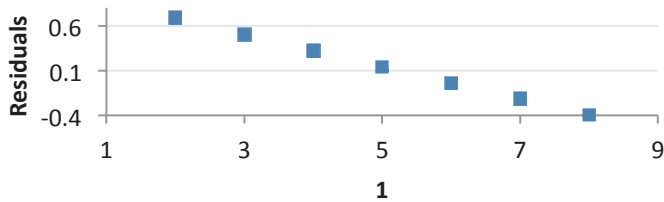
LCL - Lower limit of the 95% confidence interval  
UCL - Upper limit of the 95% confidence interval  
\*\* - Requires Pro version, please upgrade.

Observation	1	Predicted Y	Residual	Standardized [Excel]	Studentized	Deleted t	Leverage	Cook's D	DFIT	PRESS
1	0.94548	0.25915	0.68633	1.39636	1.78435	2.37761	0.0197	0.05517	0.33709	0.70012
2	0.89223	0.38873	0.5035	0.92573	1.32578	1.43931	0.04433	0.0703	0.31001	0.52685
3	0.84021	0.51831	0.3219	0.45828	0.86333	0.84215	0.07882	0.05498	0.24634	0.34944
4	0.7894	0.64789	0.14151	-0.00606	0.389	0.35967	0.12315	0.01832	0.13479	0.16138
5	0.73976	0.77746	-0.0377	-0.46738	-0.10701	0.09778	0.17734	0.00213	-0.0454	0.04583
6	0.69127	0.90704	0.21577	-0.92573	-0.63768	0.60291	0.24138	0.11154	0.34009	0.28442
7	0.64391	1.03662	0.39271	-1.3812	-1.22163	1.28662	0.31527	0.59236	0.87304	0.57353
Minimum	0.64391	0.25915	0.39271	-1.3812	-1.22163	1.28662	0.0197	0.00213	0.87304	0.57353
Maximum	0.94548	1.03662	0.68633	1.39636	1.78435	2.37761	0.31527	0.59236	0.33709	0.70012
Mean	0.79175	0.64789	0.14386	0.	0.3423	0.43306	0.14286	0.12926	-0.0329	0.11915

Scatter Diagram (Predicted Y, 1 vs. 1)



Residuals vs 1



Weibull regression parameters

<b>50+ AGE, UK, Late Detected, Survival Cycles</b>	<b>YEAR</b>	<b>Median Ranks</b>	<b>1/(1-Median Rank)</b>	<b>ln(ln(1/(1- Median Rank)))</b>	<b>ln(Survival Cycles)</b>
<b>100.00%</b>	<b>1</b>	<b>0.067307692</b>	<b>1.072164948</b>	<b>-2.663843085</b>	<b>0</b>
<b>97.73%</b>	<b>2</b>	<b>0.163461538</b>	<b>1.195402299</b>	<b>-1.72326315</b>	<b>-0.022977983</b>
<b>95.51%</b>	<b>3</b>	<b>0.259615385</b>	<b>1.350649351</b>	<b>-1.202023115</b>	<b>-0.045944482</b>
<b>93.34%</b>	<b>4</b>	<b>0.355769231</b>	<b>1.552238806</b>	<b>-0.821666515</b>	<b>-0.068899472</b>
<b>91.22%</b>	<b>5</b>	<b>0.451923077</b>	<b>1.824561404</b>	<b>-0.508595394</b>	<b>-0.091842934</b>
<b>89.16%</b>	<b>6</b>	<b>0.548076923</b>	<b>2.212765957</b>	<b>-0.230365445</b>	<b>-0.114774844</b>
<b>87.14%</b>	<b>7</b>	<b>0.644230769</b>	<b>2.810810811</b>	<b>0.032924962</b>	<b>-0.13769518</b>
<b>85.16%</b>	<b>8</b>	<b>0.740384615</b>	<b>3.851851852</b>	<b>0.299032932</b>	<b>-0.160603923</b>