Bronchiectasis Domiciliary treatment

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Plan of talk

- Background of bronchiectasis
- Who requires IV antibiotics
- Domiciliary treatment
- Results to date….

PROBLEM

- CHRONIC COUGH
- CHRONIC SPUTUM PRODUCTION
- RECURRENT CHEST INFECTIONS
- FATIGUE… MALAISE…. CHEST PAIN... POOR QOL

Ref	N	INF	IMMUNE	CT	ABPA	CF	Ciliary	IBD	Asp	Cong	No cause
1995	123	42%	4%			4%					30%
2000	150	29%	8%	3%	7%	3%	2%	1%	4%	1%	53%
2003	100	33%	1%	6%	1%						41%
2015*	236	17.4%	7.1%	4.7%	3%	4.6%		See CT	2.5%	See CF/ Cil	47.9%
2015 $$	1258	20%	5.8%	10%							40%

*Asthma 11.4%

$$ Asthma 3.3%; COPD 15%

Nicotra et al Chest1995;108:955-61
Pasteur et al Am J Respir Crit Care Med 2000;162:1277-84
Kelly et al Eur J Intern Med 2003;14:488-92
Altenburg Neth J Med MAY 2 0 15 , V OL . 7 3 , N O 4
Lonni Ann Am Thorac Soc Vol 12, No 12, pp 1764–1770, Dec 2015

Primary care database

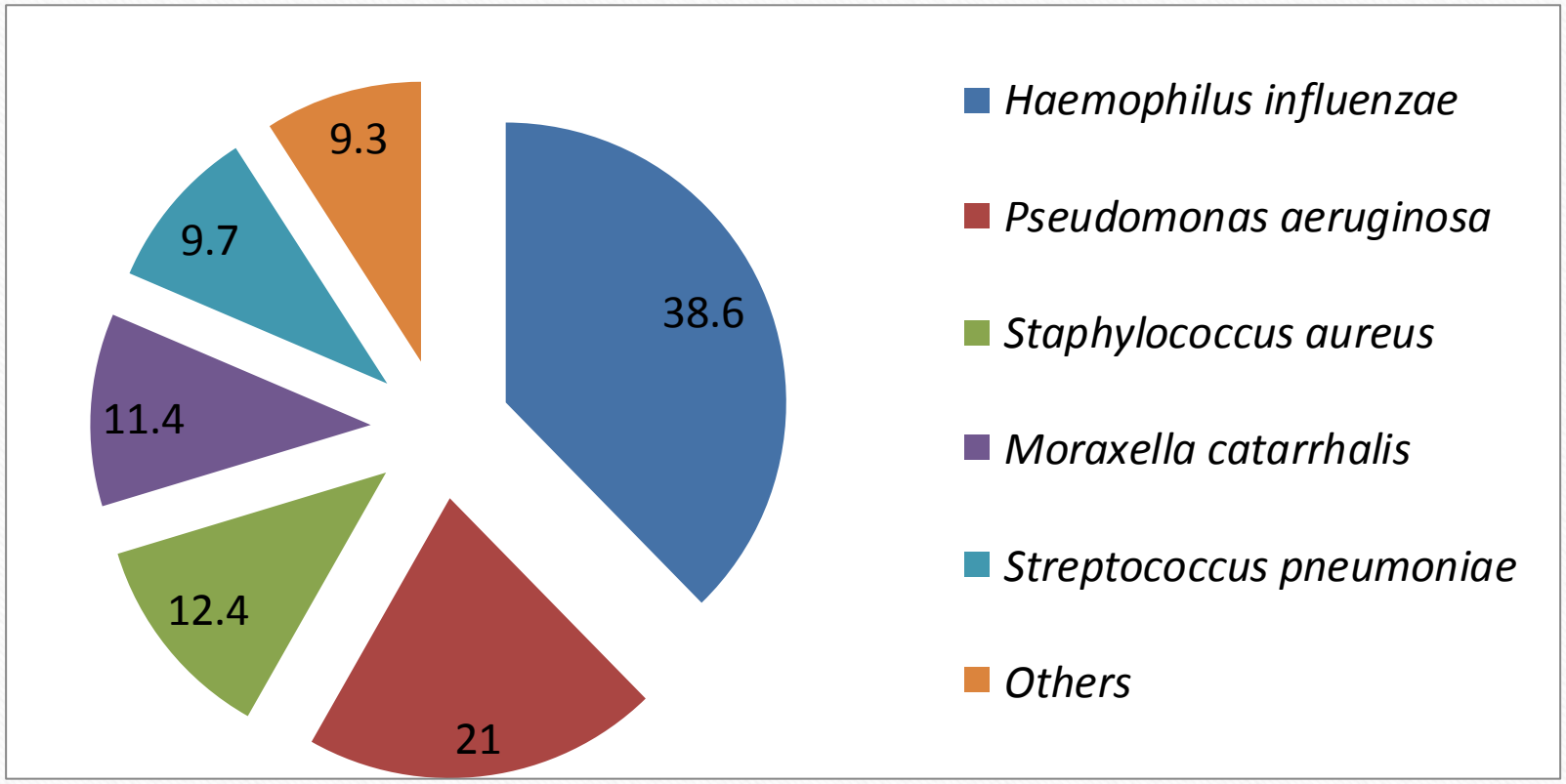
Study population	18793
Asthma	7988 (42.5)
Chronic obstructive pulmonary disease	6774 (36.1)
HIV	1300 (6.9)
Rheumatoid arthritis	1163 (6.2)
Other connective tissue diseases	969 (5.2)
Inflammatory bowel disease	527 (2.8)
Bone marrow transplant	20 (0.11)
Hypogammaglobulinaemia	172 (0.9)
Allergic bronchopulmonary aspergillosis	339 (1.8)
None of these comorbidities	6422 (34.2)

Jennifer K. Quint et al. Eur Respir J 2016;47:186-193

Conventional Microbiology Culture

pathogenic microorganisms were isolated in 75% of patients

Environmental mycobacteria 2-30%; Metanalysis 9.2%



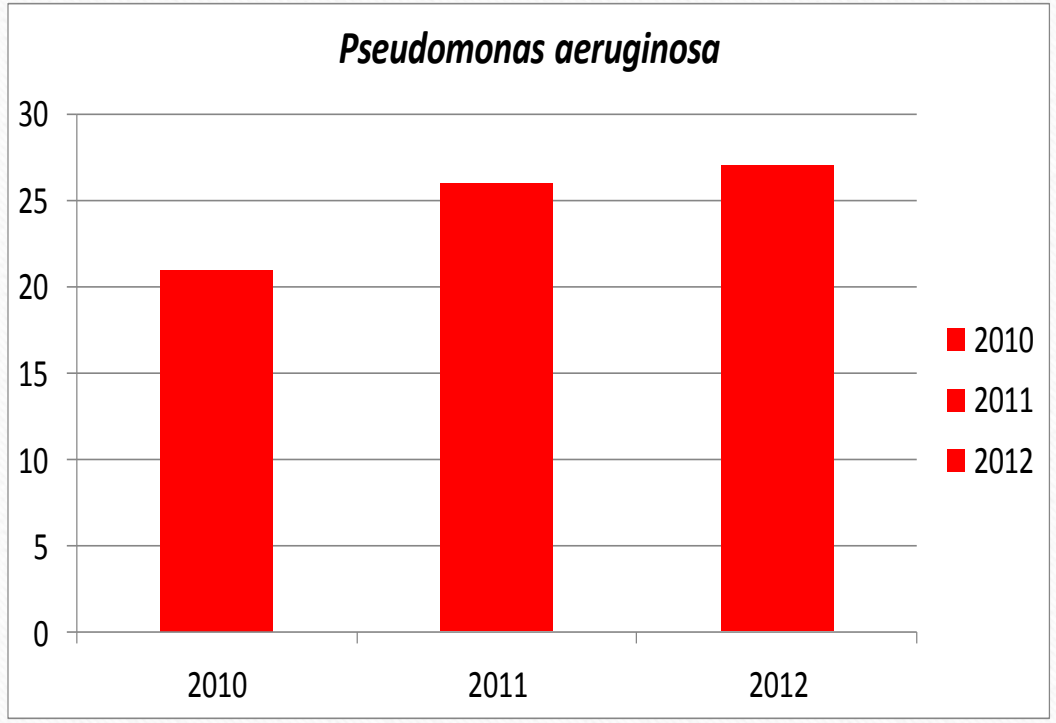
Am J Respir Crit Care Med. 2012;186(7):657-65

Arch Med Sci 2014; 10: 661-8

Ps. aeruginosa

- 21 Cohort studies
- 3,683 patients

	OR
Mortality	2.95, 95% CI 1.98-4.40
Hospital admissions	6.57, 95% CI 3.19-13.51
Mean difference exacerbations	0.97 per year, 95% CI 0.64-1.30
SGRQ	18.2, 95% CI 14.7-21.8



Ann Am Thor Soc2015 Sep 10

Thorax. 2012 Oct;67(10):928-30.

Thorax. 2014 Mar;69(3):292-4.

BTS Gx 1010- needing antibiotics?

Increased cough ± wheeze ± breathlessness ± systemic upset

Exacerbations requiring antibiotic therapy

Increased sputum volume or change of viscosity

Increased sputum purulence

IV ANTIBIOTICS FOR 14 DAYS
BTS Gx 2010

- NEED HOSPITAL ADMISSION BECAUSE SEVERE EXACERBATION
- FAILURE OF AN APPROPRIATE ORAL ANTIBIOTIC
- HAS A PATHOGEN ONLY RESPONSIVE TO INTRAVENOUS ANTIBIOTIC THERAPY eg. *Ps. aeruginosa*

Thorax. 2014 Mar;69(3):292-4.

Eur Respir J. 2016 Jul;48(1):244-8

	UK %	ITALY %
People with bronchiectasis receiving intravenous antibiotic treatment to have an objective evaluation of the efficacy of their treatment and the result recorded	78	N/A
Services for people with bronchiectasis to include provision of home intravenous antibiotic treatment for exacerbations in selected **patients**	40	2.3

Quality Standards for Bronchiectasis

Domiciliary treatment

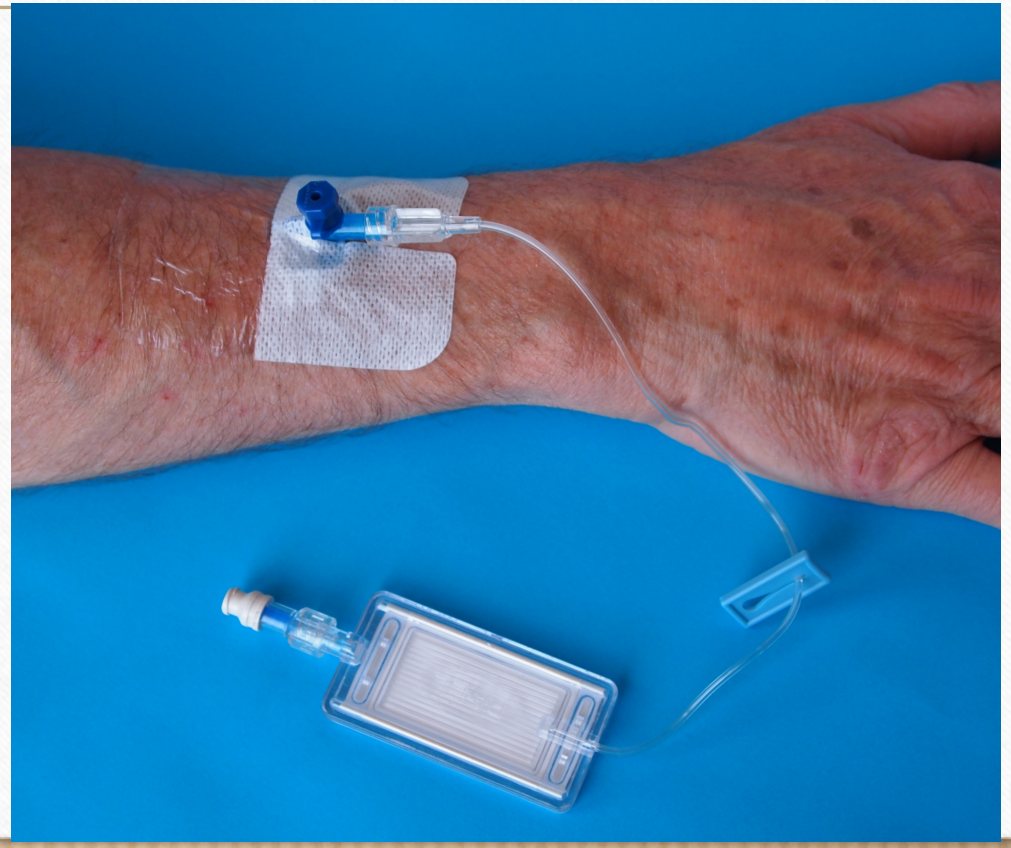
- Respiratory nurse specialists *3
- Pharmacist- information booklets; epipen
- Long lines; portacatheters
- Website with video

www.bronchiectasis.scot.nhs.uk

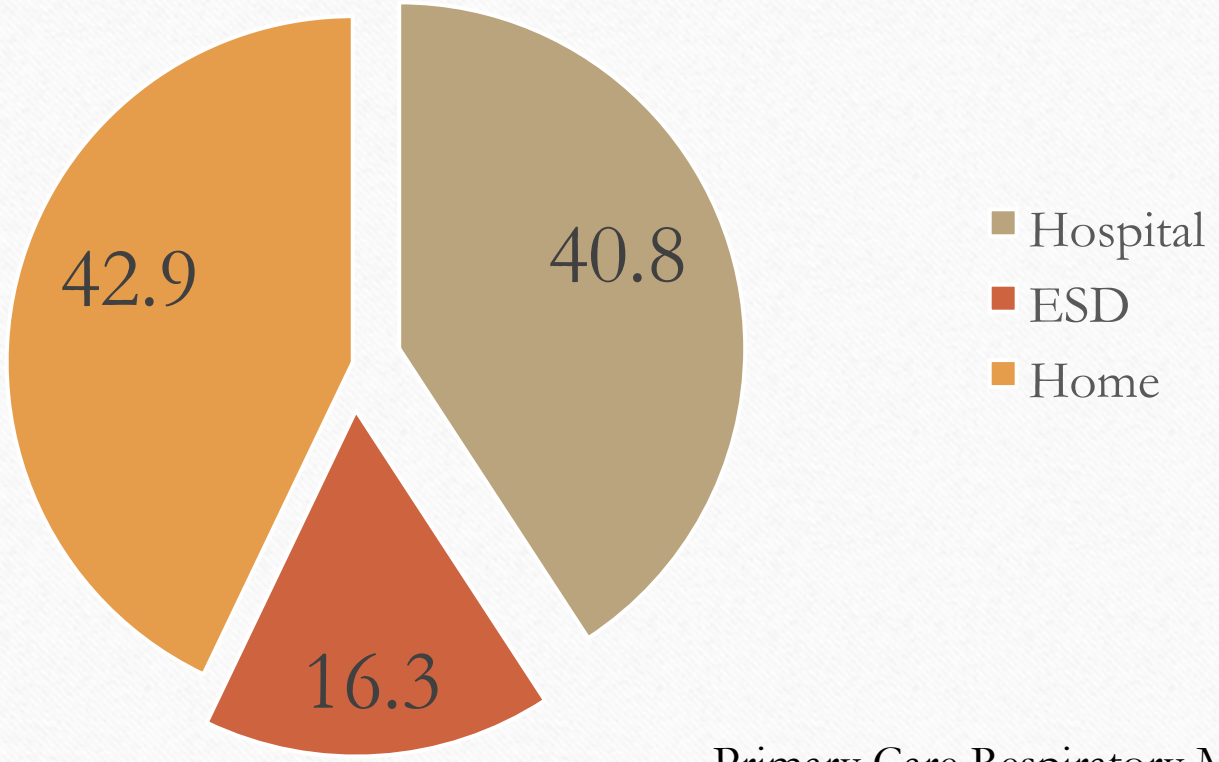
- Assessments

1] assess safe to deliver self administered therapy

2] baseline assessment, d7 and d14



IV Antibiotic therapy
N=196 over 5y



Primary Care Respiratory Medicine (2014) 24, 14090

	IN PATIENT	ESD	HOME	P
AGE (years)	71 (62–76)	65 (56–69)	61 (63–69)	0.0008
FEV_1 (L)	1.1 (0.9–1.4)	1.4 (1–1.8)	1.4 (1–1.9)	0.06
IHD	16.7%	17.4%	11.5%	0.5
ASTHMA	25%	47.8%	28.8%	0.001
COPD	41.7%	13%	11.5%	<0.0001
Type 2 DM	11.1%	8.7%	2%	0.03
ICS	72.5%	91.3%	82.7%	0.004
Oral Steroids	5.6%	8.7%	5.8%	0.6
LT Antibiotic	10%	4.3%	7.7%	0.2

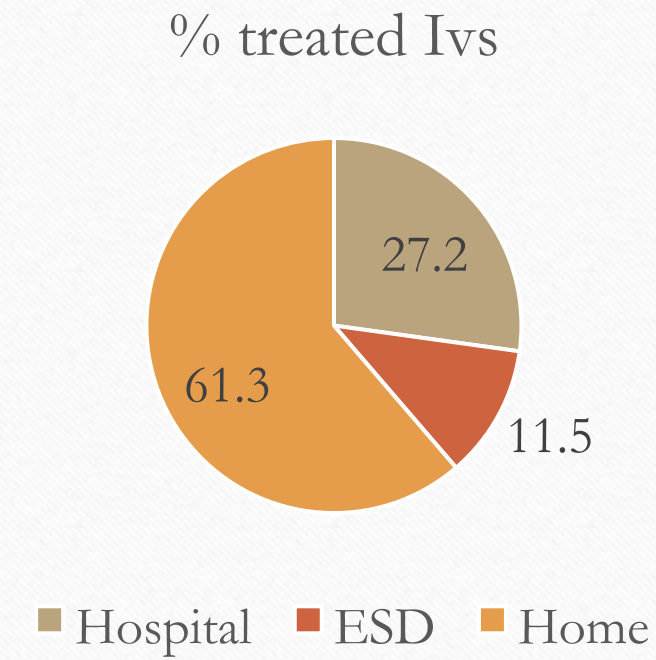
	INPATIENT	ESD	HOME
Pseudomonas aeruginosa	48.8%	28.1%	34.5%
Coliforms	11.3%	15.6%	17.9%
MRSA	7.5%	3.1%	1.2%
MSSA	3.8%	6.3%	9.5%
H. influenzae	8.8%	15.6%	32.1%
S. pneumoniae	3.8%	6.3%	14.3%
M. catarrhalis	5%	6.3%	13.1%
MNF	13.8%	21.9%	28.6%

1,443 BED DAYS SAVED

	INPATIENT	ESD	HOME
Allergic to antibiotic	1.2%	0%	1.2%
Side effects	5%	6.3%	4.7%
Anaphylaxis	0%	0%	0%
C. difficile	0%	0%	0%
Line complications	0%	6.3%	3.6%
30d readmission	13.8%	12.5%	14.2%
14d MR	0%	0%	0%

	Inpatient group (N=36) Median (Interquartile range)			*Early supported discharge group (N=23) Median (Interquartile range)*			*Domiciliary group (N=52) Median (Interquartile range)*		
	Day 1	*Day 14*	P *value* [a]	*Day 1*	*Day 14*	P *value* [a]	*Day 1*	*Day 14*	P *value* [a]
ISWT (m)	120 (30–200)	200 (100–300)	0.0004	180 (60–280)	270 (160–350)	0.009	250 (10–240)	340 (210–440)	0.0006
FEV_1 (l)	1.1 (0.9–1.4)	1.3 (0.9–1.4)	0.04	1.4 (1–1.9)	1.5 (1.1–1.9)	0.1	1.4 (1.1–1.9)	1.6 (1.2–2)	<0.0001
FVC (l)	1.9 (1.5–2.3)	2 (1.6–2.5)	0.01	2.3 (1.7–2.9)	2.4 (2.1–2.9)	0.02	2.4 (1.9–2.9)	2.7 (2.2–3.2)	0.002
LCQ (Units)	11.5 (7.4–14.3)	15.1 (12.2–18)	<0.0001	12.9 (10.5–16.4)	17.4 (13.8–19.8)	<0.0001	10.8 (9.4–12.3)	18 (10.6–19.4)	<0.0001
SGRQ (Units)	71.4 (60.6–85.2)	57.8 (47.8–68.4)	<0.0001	48.4 (35.7–63.8)	33.2 (24–53.3)	<0.0001	58.1 (46.5–69)	32.9 (24.1–64.3)	<0.0001
Sputum volume (ml)	20 (10–30)	5 (3.5–11)	0.02	17.5 (10–30)	8.5 (3–15)	0.03	20 (12–30)	5 (2–10)	<0.0001
% PPM	92.5%	22.2%	<0.0001	65.2%	13%	<0.0001	78.8%	15.4%	<0.0001
WCC[a] ($\times 10^9$/l)	10.5 (9.1–13.5)	8.7 (6.5–11.6)	0.003	9.7 (7.6–13.3)	7 (5.5–9.8)	0.07	16.1 (7.7–11.6)	7.5 (5.1–9.7)	<0.0001
CRP (mg/l)	48.5 (16.5–83.5)	8.7 (6.5–11.6)	0.001	42 (8–104)	5.5 (1–9)	0.002	47 (11–135)	4 (1–9)	<0.0001
ESR (mm/h)	41 (21.5–78)	27 (16–42)	0.03	34 (18–51)	23.5 (11.5–37.5)	0.01	29.5 (17.5–42)	17 (13–28)	0.0004

IV Antibiotic therapy
N=243 over 2y
13.9% via emergency services



	Anaphylaxis	IV access related complications	30d readmission	MR
Hospital	0%	3%	10.6%	3%
ESD	0%	7.1%	17.8%	0%
Home	0%	0.7%	1.3%	0%

MV analysis- risk factors for hospital treatment

- High BSI
- Presentation to emergency services

QJM. 2016 Nov;109(11):723-729.

Summary

- About 60-70% patients needing intravenous antibiotics can be taught to deliver at home
- This can be done safely with limited morbidity and no increase in mortality
- Main complications relate to line issues but infrequent
- This service has majorly reduced hospital bed days and promoted treatment in the community….