Welcome to the
8th Advances Against Aspergillosis international conference
Introduction and summary of global disease burden

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Wythenshawe Hospital
The University of Manchester

Global Action Fund for Fungal Infections
8th ADVANCES AGAINST ASPERGILLOSIONS
Lisbon, Portugal
1 - 3 February 2018
Lisbon Congress Centre

• 2004 (San Francisco)
• 2006 (Athens)
• 2008 (Miami)
• 2010 (Rome)
• 2012 (Istanbul)
• 2014 (Madrid)
• 2016 (Manchester)

With over 300 attendees at each meeting
• 245 papers have been published in 8 Supplements,
• comprising 1,863 pages of full papers,
• 1,223 abstracts from the meetings
Welcome to the Mucormycosis community
Tweet
#8thAAA
Deaths from fungal infections need to fall

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>&gt;1,660,000</td>
<td>1,800,000 (200,000 with HIV)</td>
<td>429,000</td>
</tr>
</tbody>
</table>

www.GAFFI.org
<table>
<thead>
<tr>
<th>Aspergillosis</th>
<th>Invasive</th>
<th>Chronic</th>
<th>Allergic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Burden</td>
<td>200,000 – 400,000</td>
<td>1.5 M – 3M</td>
<td>6M – 20M</td>
</tr>
<tr>
<td>Untreated Mortality</td>
<td>~100%</td>
<td>~75% / 5 yrs</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Treated Mortality</td>
<td>30-85%</td>
<td>~45% / 5 yrs</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Orphan Drug Designation?</td>
<td>Yes</td>
<td>Yes</td>
<td>No (possible for Cystic Fibrosis)</td>
</tr>
<tr>
<td>Placebo-Controlled RCT Possible?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Surrogate Endpoint</td>
<td>Yes/No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Risk groups and frequencies of invasive aspergillosis - different test performances

- **High Risk**
  - Chronic granulomatous disease
  - Allogeneic HSCT with graft versus host disease
  - Myelodysplastic syndrome treated with remission induction therapy
  - Acute myeloblastic leukemia treated with remission induction therapy
  - Lung or heart-lung transplantation
  - Small bowel transplantation
  - Liver transplantation
  - Allogeneic HSCT without graft versus host disease
  - Acute myeloblastic leukemia during consolidation therapy
  - Acute lymphoblastic leukemia
  - Heart transplantation
  - Chronic lymphocytic leukemia
  - Myelodysplastic syndrome
  - Multiple myeloma
  - Chronic obstructive pulmonary disease with acute exacerbation
  - AIDS
  - Non-Hodgkin’s lymphoma
  - Autologous hematopoietic stem cell transplantation (HSCT)

- **Intermediate Risk**
  - Kidney transplantation
  - Solid tumor
  - Auto-immune disorders

- **Low Risk**

- + Severe influenza – 16%
- + Lung cancer – 2.6%

Herbrecht, Ann NY Acad Sci 2012;1271:23
COPD admissions (rate per 40+ years old)

5.1.2. COPD hospital admission in adults, 2006 and 2011 (or nearest year)

Rate of COPD hospitalisation = ~25 - 375/100,000 annually

Invasive pulmonary aspergillosis in patients with chronic obstructive pulmonary disease: a case control study from China

H. Xu¹, L. Li¹, W.-J. Huang¹, L.-X. Wang², W.-F. Li¹ and W.-F. Yuan¹
1) Respiratory Medicine and 2) Clinical Laboratory, Guangzhou General Hospital of Guangzhou Military Command, Guangzhou, China

58 of the 298 COPD admissions with a lower respiratory tract sample processed grew *Aspergillus* spp.

39 (3.9%) had probable IA.
Only 13% had oral corticosteroids
43% died

COPD in China

32,800,000 patients with COPD
11,858,100 admissions to hospital

154,155 IA cases in COPD at a 1.3% rate (Spain)
462,466 IA cases in COPD at a 3.9% rate (China)

199,000 deaths predicted annually in China

Zhu et al. ECCMID 2013; Abstr 3393.
Guinea et al Clin Microbiol Infect 2010;16:870
Xu et al, Clin Microbiol Infect 2012;18:403
Lung cancer

1,824,700 patients with lung cancer each year

If 2.6% develop IA, then:

47,500 cases predicted annually

www.Globocan.org
Yan X et al, Cancer 2009; 115: 5018
Invasive aspergillosis complicating cancer and leukaemia

CANCER AND FUNGAL INFECTIONS

7,400,000 Cancer cases a year

Major surgery
Chemotherapy
Radiotherapy
All at risk of fungal diseases

Leukaemia
Fatal fungal infections
130,000

Lung cancer
Fatal fungal infections
32,000

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Prognosis of chronic pulmonary aspergillosis


387 cases
Mean age 59 years

42 cases
Mean age 72 years

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Fungal disease of the lungs in outside the hospital

~200 million adult asthmatics

<table>
<thead>
<tr>
<th>Fungal infection</th>
<th>Annual burden</th>
<th>Annual case fatality rate</th>
<th>Estimated deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic pulmonary aspergillosis</td>
<td>&gt;3,000,000</td>
<td>~15% mortality in developed world</td>
<td>&gt;450,000</td>
</tr>
<tr>
<td>SAFS</td>
<td>&gt;6,500,000</td>
<td>&lt;1% but no good figures</td>
<td>350,000 - 489,000 asthma deaths - ~50% SAFS related</td>
</tr>
<tr>
<td>ABPA (asthma)</td>
<td>&gt;4,837,000</td>
<td>&lt;1%</td>
<td>&lt;10,000</td>
</tr>
<tr>
<td>ABPA &amp; Aspergillus bronchitis (cystic fibrosis)</td>
<td>&gt;19,000</td>
<td>&lt;1%</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Form of aspergillosis</td>
<td>Number</td>
<td>Deaths</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
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<td>---------</td>
<td></td>
</tr>
<tr>
<td>IA</td>
<td>400,000</td>
<td>300,000</td>
<td></td>
</tr>
<tr>
<td>CPA</td>
<td>3,000,000</td>
<td>450,000</td>
<td></td>
</tr>
<tr>
<td>ABPA</td>
<td>4,800,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>SAFS</td>
<td>6,500,000</td>
<td>250,000</td>
<td></td>
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<tr>
<td>Total</td>
<td>14,700,000</td>
<td>1,010,000</td>
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World Aspergillosis Day
Feb 1st 2018
5 aspirational targets for aspergillosis to be achieved by 2030
Aspergillosis Target 1:

Survival in invasive aspergillosis increased to 90% (up from under 50%)
Aspergillosis Target 2:

Plugging the major gaps in our understanding of the biological, immunological and genetic basis of aspergillosis
Aspergillosis Target 3:
Diagnostics
(most countries, including all of Africa, have no diagnostic capability at all)

• New widely available, standardized and clinically validated diagnostics techniques
• New simple screening tests developed
Aspergillosis Target 4:

Treatment

• New antifungal agents licensed for invasive, chronic and allergic aspergillosis and for all age groups (only 3 classes currently available)
Aspergillosis Target 5:

At least one vaccine against aspergillosis in clinical trials or approved (none currently)
Other needs:

• Improvement in the public’s awareness of fungal diseases and specifically aspergillosis
• Keeping homes free from excessive Aspergillus and other moulds related to dampness, which increases the number and severity of asthma episodes
• Stronger evidence base of antifungal therapy allergic aspergillosis to reduce the number and severity of asthma episodes, and probably asthma deaths
• Hospital environments for vulnerable patients free of Aspergillus
• Reduction in azole resistance with reduced use of azole fungicides in non-essential crops
• Prevention of a new epidemic of resistance with any new classes of antifungal used for aspergillosis by not allowing such chemical class to be used as a fungicide
• Need for better surveillance and detailed epidemiology data
• Development of immunotherapies as well as vaccines
Many thanks to all our sponsors
You have made the meeting possible
Enjoy the conference

Please be at your poster on your odd or even day, as the SAGE squads will be visiting