

2011: The year in review. Part II: Tuberculosis and lung disease

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IN THIS YEAR-IN-REVIEW ARTICLE, we review 52 of 55 articles published on tuberculosis (TB) in the *International Journal of Tuberculosis and Lung Disease* from August through December 2011, complementing the 104 summarized by Chang and Nuermberger,¹ and using the same categories (Table 1). We also summarize 33 of 36 non-TB articles for the entire year (Table 2).

ACTIVE TB

Epidemiology

There was diversity in six epidemiological publications. Over 8 years, one Madrid hospital showed an overall incidence of disease of 1.9 cases per 100 person-years in a retrospective cohort of 1824 human immunodeficiency virus (HIV) infected patients receiving ART; 19% had TST-positive results, with an increased risk of progression to disease (odds ratio [OR] 4.4). Baseline CD4 count was a factor only in patients with tuberculin skin test (TST) negative results, elevating the risk 16-fold.² A 2-year Polish hospital-based survey affirmed that the current genotyping triage methodology, the combination of 15-loci MIRU-VNTR (mycobacterial interspersed repetitive units-variable number of tandem repeats) typing with spoligotyping for primary analysis, with insertion sequence 6110-RFLP (restriction fragment length polymorphism) typing reserved as a final step, is sufficient for disaggregating epidemiologically linked clusters.³ A 5-month nationwide Mongolian survey among new and previously treated sputum smear-positive TB patients demonstrated striking emergence of multidrug-resistant (MDR) disease among those previously treated: 28% vs. 1.4% among new cases. MDR-TB among new cases had risen slightly from 1.0% in 1999, in a survey excluding retreatment cases.⁴

Three studies were on emerging topics. An Unresolved Issues piece on the epidemiology and science behind the emerging dual epidemic of TB and diabetes calls us to action and proposes a framework, arguing that we must proceed with more speed and

coordination than we did for TB-HIV.⁵ In a Ugandan study, 50 HIV-infected and 50 TB-HIV coinfecting adults had low levels of 25(OH)D and calcium levels compared to 50 controls.⁶ A Brazilian hospital-based, cross-sectional study of TB patients showed a coinfection rate for hepatitis C virus (HCV) of 7.5% and of 28% for HIV. Two thirds of HCV-infected patients were HIV-infected, suggesting potential benefit from integrated approaches.⁷

Risk factors

TB risk factors

Four studies examined the risk of TB among contacts, two of which focused on drug-resistant disease. A retrospective 4-month Peruvian study that estimated the incidence of TB disease among 2112 household contacts of MDR-TB patients in 358 households within 3 years following index-case diagnosis found that 108 (5%) developed disease in 80 households (22%), an incidence rate of 2360 per 100 000 contact follow-up years.⁸ A Dutch retrospective study of contact investigations (642 index TB patients, 62% of 1040 possible) showed that close contacts of immigrant TB patients were less likely than native Dutch patients to be examined for TB (89% vs. 93%) and infection (50% vs. 75%), yet yield was higher (disease 1.5% vs. 0.4%; infection 13% vs. 10%).⁹ A 2004–2008 South African prospective, observational study found 14 (1.8%) MDR-TB cases among 793 contacts of 221 MDR-TB index cases (incidence 1765/100 000 population), and 19 (2.0%) extensively drug-resistant (XDR) cases among 973 contacts of 287 XDR-TB index cases (incidence 1952/100 000).¹⁰ A 4-year Indian cross-sectional study of contact investigations found that among 58 index MDR-TB patients there were 302 contacts, of whom 5.3% developed TB and 0.66% MDR-TB.¹¹

Delay in diagnosis

Although potentially biased, as the private sector was not examined directly, a Malaysian cross-sectional study of 296 newly registered smear-positive TB

Table 1 Classification of 168 articles on TB published in issues 1–8¹ and 9–12 of volume 15 (2011) of the *International Journal of Tuberculosis and Lung Disease**

Subject areas, categories	Jan–Aug <i>n</i>	Sept–Dec <i>n</i>	Total
Active TB			
Epidemiology	16	8	24
Risk factors			
TB risk factors	8	8	16
Delay in diagnosis	3	1	4
Morbidity and mortality	8	1	9
Treatment failure and recurrence	3	1	4
Diagnosis			
Specimens	3	3	6
Phenotypic methods	6	0	6
Molecular methods	7	5	12
Other methods	2	1	3
Treatment			
Standard TB regimens	3	1	4
Extra-pulmonary TB	2	0	2
MDR-TB	3	3	6
New TB drugs	2	1	3
TB-related complications	1	5	6
Latent TB infection			
Epidemiology	3	4	7
Diagnosis	9	5	14
Operational research			
Improving program performance	14	10	24
Assessing the impact of TB control strategies	11	7	18

*Not all references are reviewed in this article, but all were classified and included in these counts.

TB = tuberculosis; MDR-TB = multidrug-resistant TB.

patients showed extreme delay in treatment seeking among adults (aged 30–39 years) or when first choices of treatment were non-government health facilities.¹²

Morbidity and mortality

From Zimbabwe, an 18-month cohort study followed 1195 smear-negative suspects for 1136.8 person-years and showed 63% HIV prevalence, with a mortality rate of 3% for non-HIV-infected and 17% for HIV-infected persons (hazard ratio [HR] 5.8).¹³

Treatment failure and recurrence

From Seoul, a retrospective review of 123 MDR-TB patients showed four relapses (no genotyping performed) among 90 patients initially declared treatment completed ($n = 31$) and cured ($n = 59$).¹⁴

Diagnosis

Specimens

Three studies examined specimen-centered questions. A 26-month prospective study in a South African primary health care clinic enrolled 270 consecutive children (median age 38 months) with clinically suspected pulmonary TB and an adult household contact with either pulmonary disease or HIV infection with respiratory symptoms. Sputum induction was well tolerated and successful in all but one, and

Table 2 Classification of 36 lung disease articles published in issues 1–12 of volume 15 (2011) of the *International Journal of Tuberculosis and Lung Disease**

Subject areas, categories	<i>n</i>
Non-tuberculous mycobacteria	3
Smoking or tobacco	7
Chronic obstructive lung disease and emphysema	11
Asthma	2
Lung cancer	2
Pneumonia	6
Other	5

*Not all references are reviewed in this article, but all were classified and included in these counts.

led to the diagnosis of 24% of the children with TB, of whom 17% were microbiologically confirmed. The overall diagnostic yield was 78%.¹⁵ Similar to several studies, in Laos the bleach method is easy to perform and cost-effective in people living with the acquired immune-deficiency syndrome (AIDS), increasing the sensitivity of microscopy from 59% to 93%, with 100% specificity, among 174 samples from 92 consecutive HIV-infected patients, 29 of whom had culture-positive results.¹⁶ A cross-sectional, 10-month Vietnamese study of 397 consecutive HIV-infected patients seeking care at a local clinic showed that clinical findings alone have poor sensitivity, but in combination with various diagnostic tests, for example CD4+ cell count, acid-fast bacilli (AFB) sputum smear and chest X-ray (CXR), diagnostic performance improved substantially. The myriad combinatorial options demonstrate the importance of local analysis.¹⁷

Molecular methods

Based on data from two hospitals in Japan, among 170 TB suspects (79% with TB), the loop-mediated isothermal amplification (LAMP) test kit showed 98% sensitivity for raw sputum (direct testing) among sputum smear- and culture-positive TB patients, 56% for smear-negative, culture-positive patients, and 88% overall. Specificity was 94%. Other comparisons were made for indirect LAMP, Cobas Amplicor, and TRC Rapid MTB.¹⁸ A laboratory-based study evaluated the rapid test, the SD Bioline TB Ag MPT64 assay kit (a immunochromatographic test based on a 64-kDa antigen, manufactured by Standard Diagnostics Inc, Yongin, South Korea), and showed a sensitivity of 99% (Ogawa media) and 95% (136/143 in liquid media), and a specificity of 100%.¹⁹ The performance of the biochip test (CaptialBio, Beijing, China; PCR-based on 16S rRNA) was assessed in a multicenter, prospective hospital evaluation, using 1565 clinical isolates, against 53 reference strains. It showed a sensitivity of 99.9% for species identification, where 70% were *Mycobacterium tuberculosis* and the rest non-tuberculous mycobacteria (NTM; 17 targets for 19 species), and 100% reproducibility.²⁰

Treatment

Standard TB regimens

The route of infection and the inoculum size influence the course of TB in female BALB/c mice and the therapeutic response to the first-line anti-tuberculosis drug regimen consisting of isoniazid (INH), rifampicin (RMP), and pyrazinamide (PZA), important when evaluating the comparative therapeutic potential of novel agents and their role in regimens.²¹

MDR-TB

Three studies addressed MDR-TB treatment: one on outcomes, another on patient support, and a third on monitoring cultures. Results from India describe discouraging but preliminary experience of treating 10 XDR-TB patients identified among 104 non-HIV-infected persons with MDR-TB in two cohorts.²² Among 85 MDR-TB patients in Pakistan, treated with free-of-charge individualized regimens under strong programmatic management with close treatment support and monthly food incentives, time to culture conversion on locally procured medicines was delayed (196-day median) due to smoking, high smear grade at baseline and previous treatment with second-line drugs.²³ Retrospective simulation of three monitoring strategies (culture every 2 or 3 months, and monthly smears alone) affirmed the usefulness of monthly culture both before and after conversion.²⁴

New TB drugs

A 7-year US retrospective review of 971 TB cases identified 117 (13%) who had received rifabutin (RFB), and showed it was well-tolerated and useful. Indications for use were RMP-related adverse events (AE; 57%), concurrent antiretroviral therapy (ART; 21%), potential or actual interaction with other medications (14%), and liver disease (8%). Nineteen patients experienced an AE on RFB. Among patients with a previous RMP-related AE, 80% of whom were successfully treated with RFB, only dermatologic AE was associated with subsequent RFB intolerance.²⁵

TB-related complications

Of five studies on complications, two pertained to adults, two to children and one to both, two of which were on BCG. Addressing a common problem, a retrospective review of 298 patients admitted to a tertiary dermatology ward in South Africa over 8 years found that 65 patients, 60 of whom were HIV-infected, had cutaneous AEs due to first-line anti-tuberculosis drugs. Although re-introduction reactions are common, the majority are non-life-threatening. Anti-tuberculosis drugs were reintroduced in 71% of the patients (50% developed second reactions). The most frequent re-introduction reactions were itch (48%) and hepatitis (39%). Of re-introduction reactions, 57% were mild, 26% moderate and 26% severe. Among those with re-introduction reactions, RMP was the offending drug

in 57%, INH in 22%, PZA in 13%, and ethambutol, streptomycin, and ofloxacin in 4% of cases each.²⁶

An examination of acetylation status (assigned by NAT2 genetic polymorphisms) found no increased risk of hepatotoxicity among 50 TB patients (cases) and 67 patients (controls) treated with INH, RMP, and PZA. Yet, comparing 1312 healthy controls, a significantly increased percentage of TB patients with anti-tuberculosis drug-induced hepatotoxicity had slow acetylator genotypes (72% vs. 54.8%; OR 2.1), and a decreased percentage had the intermediate acetylator genotypes (18% vs. 38.1%; OR 0.37).²⁷

A retrospective South African study described more frequent abnormal thyroid function tests in children undergoing treatment with ethionamide.²⁸ Also from South Africa, 369 HIV-infected infants aged 6–12 weeks with CD4 count ≥ 250 cells/mm³, who were all bacille Calmette-Guérin (BCG) vaccinated, were randomly assigned to early (before 12 weeks) or deferred (after immunological or clinical progression) ART. BCG-related immune reconstitution inflammatory syndrome (IRIS) developed in 5% with early treatment and 18% when deferred. With CD4 counts < 250 cells/ μ l, IRIS developed in 18%.²⁹

LATENT INFECTION WITH *M. TUBERCULOSIS*

Epidemiology

In two large urban hospitals with TB wards in Viet Nam, of 956 personnel, 40% had latent TB infection (LTBI; single-step TST cut-off 10 mm), compared to 26% among 155 school personnel. Rates among staff types were similar.³⁰ In a Cuban health care worker (HCW) screening program (initial single-step TST 10 mm cut-off) LTBI prevalence was 15.4%; 296/350 tested negative, and 1.4% (3 staff members) converted one year later. Exposure to TB patients was a risk factor, while BCG scar (76% of HCWs) was not. No TB cases were observed over 5 years.³¹

A South African cross-sectional pediatric study demonstrated a positive association between environmental tobacco smoke and *M. tuberculosis* infection indicated by TST.³² In Tanzania, INH preventive therapy (IPT) was associated with increased survival in HIV-infected adults (CD4 counts ≥ 200 cells/ μ l, positive TST). However, IPT-associated TB prevention was inconclusive.³³

Diagnosis

Three studies compared TST and QuantiFERON®-TB Gold (QFT). In rural South Africa, the impact of TB case detection strategies among 397 young children found 17% QFT-positive and 18% TST-positive (≥ 10 mm, agreement 94%, $\kappa = 0.79$). Disease was diagnosed in 13%, yielding equivalent performance (QFT sensitivity 38% and specificity 81%; TST 35% and 84%).³⁴ Both had lower sensitivity for disease than previously reported for older groups. In Italy, of

232 children and adolescent immigrants (TST ≥ 5 mm), 35% were subsequently QFT-positive. Four TST- and QFT-positive children had radiological findings of disease, were asymptomatic, and had confirmatory microbiological cultures (but were AFB smear-negative). These TB cases were aged >10 years and BCG-vaccinated. This highlights the potential advantages and concerns of using a blood test in a 'two-step' strategy in foreign-born children.³⁵ Of 28 864 individuals tested with QFT in New York City public clinics, 7% tested positive, 91% negative, and 2% indeterminate. On repeat testing of 137 patients, 4% tested positive, 64% negative, and 32% had a second indeterminate result.³⁶

An Angolan prospective study of 124 exposed children (age <5 years, 20% HIV-infected) screened with CXR and TST found 56% with disease and 18% with LTBI. Six months later, 32% of those with LTBI had progressed to disease compared to 9.4% without LTBI.³⁷ In a persistent topic, in a US study of 135 TST-positive persons, 16% were *M. avium* sensu lato dominant, suggesting misclassification of LTBI.³⁸

OPERATIONAL RESEARCH

Improving program performance

Nine publications tackled programmatic assessments. Two focused on surveillance and monitoring. A Pakistan hospital study showed improvement with a package of electronic TB referral and transfer register, assignment of referral person, and coordinator telephone monitoring for 444 new pulmonary patients: 41% confirmed registration at primary health facilities and 4% at other units.³⁹

In different regions of the globe, four of nine studies focused on interventions tailored to special features of the population affected. In Malawi, a retrospective analysis of TB patients on treatment at an integrated TB-HIV hospital clinic identified barriers to HIV services and ART uptake: not being offered ART, high CD4 count, and drug toxicity fears and stock-outs.⁴⁰ In Ethiopia, a descriptive study of 297 TB patients in a high-burden district setting and virtually absent control activities showed a village approach effective for improving access and care for pastoralist populations.⁴¹ A Russian patient-centered treatment intervention successfully reduced rates of default among patients at high risk of non-adherence.⁴² A Cambodian programmatic intervention at 21 health centers and hospitals covering 4368 TB patients (11% HIV-infected), including the TB-HIV coordinators to TB wards, resulted in better HIV testing uptake to HIV services.⁴³

Two of the nine studies focused on LTBI, one diagnostic and the other treatment. Pointing to outreach and education needs for QFT use, a US study reviewed testing of 230 consecutive HCV-infected or active or past illicit drug use participants: 64% stated

a preference for TST over QFT, 68% would take treatment based on either test, and 20% stated a willingness to take it based on TST alone.⁴⁴ In Guinea-Bissau, an IPT program had overall IPT adherence in 2631 children exposed to diseased adults than previously reported, with 76% completing ≥ 6 months.⁴⁵

Two of the nine concerned laboratory systems. Among 143 US hospital and commercial laboratories (including five of six state public health laboratories) that offer testing services for *M. tuberculosis*, the state public health laboratories perform the majority of services and species identification, culture and first-line drug susceptibility testing (DST). Less than 20% of hospital and commercial laboratories offer these services, and 79% refer specimens to state laboratories for culture, suggesting that health departments might organize shared service networks to improve efficiency and quality.⁴⁶ The INNO-LiPA Rif.TB[®] line-probe assay (detecting RMP resistance) accelerated empiric treatment, but did not reduce time to culture conversion, nor did it improve rates of culture conversion or outcomes.⁴⁷

Assessing the impact of TB control strategies

Seven diverse studies looked at impact. The first was cultural: a Thai programmatic assessment of adults with TB and good adherence consecutively enrolled at a regional TB center and seven clinics showed that stigma has minimal effect. Women and HIV co-infected patients felt stigma, associated with increased rates of missed doses.⁴⁸ The second was economic: a systematic review of 118 economic evaluation studies of TB control in high-income countries showed that 70% were from North America, and 47% concerned interventions in the general population; 85% were aimed at preventing disease; 44% of these ignored prevention of secondary infections, underestimating potential benefits. This review claims bias by choice of methodology.⁴⁹ A third was on mortality: a study of cause-specific mortality of 2.5 million Indonesian people demonstrated a high TB rate and provided evidence for health policy action.⁵⁰

Another four studies focused on LTBI: two diagnostic, one treatment and one on policy. Although relatively expensive compared to no testing, targeted testing offered the best value in a decision-analytic model of US data, including a societal perspective. Sequential testing with both TST and IGRA provided poor incremental value compared to targeted and universal strategies.⁵¹ In an urban US setting, assessment of 1291 contacts of culture-confirmed pulmonary TB cases tested with QFT-G or TST, suggested that those who were QFT-G tested were more likely to complete evaluation (64% vs. 56%), and if infected, start (89% vs. 72%) and complete (70% vs. 53%) treatment. Positive QFT-G results, but not TST results, correlated with intensity, proximity and duration of exposure in foreign-born subjects.⁵² A Canadian decision-analysis

model of contacts and lower-risk tuberculin reactors examined different efficacy scenarios and showed potential 10-year cost savings for 4 months of RMP over 9 months of INH and no treatment.⁵³ Routine implementation of contact investigation policy globally could detect over 250 000 cases annually; a survey showed significant heterogeneity in procedures in many countries, with 25% unable to define a contact.⁵⁴

Non-tuberculous mycobacteria

There were three strictly NTM pieces. Accompanied by a clinical review, a 10-year case series in Taiwan examined, unblinded and without comparison, the results of re-cutting and reassessing histology and of re-culturing stored specimens of 58 patients (62% women, 12% immunocompromised) who initially had NTM culture-positive skin and soft tissue infections. Rapidly growing mycobacteria were the most common (30 cases with 20 *M. abscessus*); an additional 17 were *M. marinum* and 4 *M. avium* complex.⁵⁵ A second 12-month Taiwanese study found that serum levels of soluble triggering receptor expressed on myeloid cells-1 (or sTREM-1) had the highest discriminatory power for NTM lung disease (60 patients) versus colonization (26 patients).⁵⁶ A retrospective, 4-year Chinese hospital study found that 18% of 1233 HIV-infected patients screened for TB had at least one culture positive for a mycobacterial species: *M. tuberculosis* in 53%, and NTM in 47%, representing 12 species.⁵⁷

LUNG DISEASE

Tobacco and smoke

Five of seven publications examined exposure to tobacco. A UK study of health care professionals reported a 7% rate of current smoking compared to 24% in the general population. Rates for doctors (2.6%) and medical students (3.8%) were lower than among nurses (8.7%) and allied health professionals (10.9%); 88% felt legislation had been effective, and one third believed bans led to reduced admissions for acute coronary syndrome.⁵⁸ An alarming prevalence of lifetime and current waterpipe smoking was reported among 1024 randomly selected Iranian university students (42%) and in the last 30 days (19%). Ever-smoking was positively associated with age and male sex (57% vs. 28%), but there was no association with marital status.⁵⁹ Environmental tobacco smoke had a negative impact—including various measures of severity and hospitalizations—on asthma among 231 children in a Serbian cross-sectional hospital study.⁶⁰ A Pakistan study showed significant levels of second-hand smoke using discreet indoor air quality devices (measuring by particulate matter concentrations) among 39 urban cafes, restaurants, and waterpipe bars.⁶¹ A Malawi study showed that individuals who used wood as their main domestic fuel had sig-

nificantly worse lung function than those who used charcoal.⁶²

One article focused on a special population. A South African cross-sectional study of 150 self-reported current smokers in two HIV clinics reported that 42% intended to quit smoking in the next year; 58% were not interested or had no plan; and 82% had made an attempt at least once.⁶³

One study had a policy focus: a simple survey documented that four areas in India were in compliance with the national smoke-free law.⁶⁴

COPD and emphysema

Of 10 articles reviewed on COPD, six were epidemiological in nature. A Canadian study estimated the prevalence of COPD in 3042 adults aged ≥ 40 years to be 17%. The two-fold variation in prevalence across cities disappeared after adjustment for age and sex.⁶⁵ An 8-month study of 2293 COPD patients (60% female) showed airflow obstruction in one in five of Mexicans and significant association with tobacco and biomass smoke exposure.⁶⁶ In a Brazilian study, interviews showed that 42% of 759 COPD subjects reported paid employment compared to 57% of those without COPD. The main factors associated with paid employment were male sex, youth, and education attainment.⁶⁷

Three studies focused on mortality. Another Brazilian analysis showed that COPD (after cardiovascular diseases and cancer) remains a leading cause of 12-year mortality despite an observed decline in mortality and hospitalization rates.⁶⁸ A case-control study of 42 patients with COPD and 84 without showed that carotid artery intima-media thickness by ultrasound, and C-reactive protein using a highly sensitive assay, were significantly lower in controls, and levels correlated with forced expiratory volume in one second. Lower levels support the hypothesis that COPD patients are at higher risk for atherosclerotic diseases.⁶⁹ In a retrospective South Korean hospital study, of 4893 patients with chest computed tomography (CT) report of emphysema, 135 cases of combined pulmonary fibrosis and emphysema were found. This combined pathology showed a five-fold greater mortality.⁷⁰

Two studies pertained to diagnosis. Spanish panels using a modified Delphi process demonstrated overall agreement ($\kappa = 0.79$) and better agreement with increased severity for appropriateness of admission for COPD among 896 distinct theoretical scenarios.⁷¹ Hemoglobin concentration was the only factor independently associated with elevated systolic pulmonary artery pressure in 117 South Korean COPD and asthma patients with measurable tricuspid regurgitant flow and no resting hypoxemia.⁷²

One study covered treatment. A South Korean study of 130 male COPD patients examined by D_{LCO} (diffusing capacity of the lung for carbon monoxide)

and residual volume/total lung capacity showed that therapeutic responses to short-acting β_2 -agonist and 3-month combined inhalation of long-acting β_2 -agonist and corticosteroid have different pulmonary function responses.⁷³

Asthma

There were two studies on asthma. In the Canary Islands, 10 000 randomly selected adults aged 20–44 years completed a screening survey. After drop out, 593 randomly selected (20% sub-sample) and 588 symptomatic subjects completed a second in-depth survey. It showed that the prevalence of asthma, asthma-related symptoms, bronchial hyperresponsiveness and sensitization to mites is the highest in Spain and ranks among the highest in the world.⁷⁴ A South Korean version of the widely-used and well-validated St George's Respiratory Questionnaire for COPD is reliable and valid for asthma, except in the symptom domain, based on 676 subjects.⁷⁵

Lung cancer

Three publications covered lung cancer: one on rate projections, another diagnosis, and the third differential diagnosis. A Spanish study of lung cancer mortality rates from 1979 to 2008 projected a 33% decrease in age-standardized rates in males, from 46/100 000 in 2004–2008 to 34/100 000 in 2024–2028, and in females a projected 45% increase, from 4.9/100 000 in 2004–2008 to 8.9/100 000 in 2024–2028.⁷⁶ A Hong Kong study showed that sputum examination followed by autofluorescence bronchoscopy may be a useful way of identifying pre-cancerous and cancerous lesions among 48 silicotic smokers.⁷⁷ A South Korean study of 47 patients diagnosed with pulmonary paragonimiasis found that a CXR nodular or mass lesion was common on presentation, highlighting the importance of its inclusion in the list of differential diagnoses in endemic areas.⁷⁸

Pneumonia other than TB or disease due to an NTM

Of six articles on pneumonia, one was focused on community-acquired disease, one was associated with mechanical ventilation, and one on the pediatric population. A Chinese retrospective analysis of 1230 inpatients with community-acquired pneumonia showed the CURB-65 scoring tool (confusion, urea >7 mmol/l, respiratory rate ≥ 30 breaths/min, low blood pressure and age ≥ 65 years) was not applied in routine hospital practice, resulting in inappropriate hospitalization and excess costs.⁷⁹ A meta-analysis (of 44 studies among 968 articles retrieved) showed that the presence of ventilator-associated pneumonia is associated with higher mortality in critically ill patients (OR 1.96); initial antimicrobial treatment may moderate it.⁸⁰ A South African retrospective study of

132 pediatric public sector admissions for pneumonia (67% HIV-infected) and 7882 fee-for-service facilities (1.2% HIV-infected) showed high costs (mortality and money) in both sectors.⁸¹

Two concerned influenza. A South Korean retrospective, multicenter cohort study of 269 adults with H1N1-associated pneumonia found a mortality rate of 7.1%.⁸² A secondary data analysis of a multi-county cohort study of 250 patients hospitalized with community-acquired 2009 H1N1 influenza pneumonia showed severity scores based on the Pneumonia Severity Index, CURB-65 and CRB-65 (CURB-65 without urea measurement) underestimated mortality rates in some patients; those with obesity or wheezing should also be considered as being at increased risk of mortality.⁸³

For procedural complications, results from South Korea of a placebo-randomized trial of oral amoxicillin/clavulanate 30 min before flexible bronchoscopy in 143 patients showed no difference in subsequent fever or serum levels of pyrogenic cytokines.⁸⁴

Other pulmonary topics of interest

A thorough assessment of oxygen concentrators in the pediatric wards of 15 hospitals showed that, years after installation, 78% of 37 machines in Malawi and 52% of 25 in Mongolia were still functioning, suggesting that use can be sustained in resource-limited settings. Performance varied substantially, and procurement of maintenance is important.⁸⁵

A French study analyzed the relationship between pulmonary nodules detected by radiologists using CT and cumulative exposure to asbestos or asbestos-related pleuro-pulmonary diseases in 5662 asbestos-exposed subjects, and the relationship between pulmonary nodules and thoracic cancer. A significant incidence of primary lung cancer (standardised incidence and mortality ratio [SIR] 1.95) and pleural mesothelioma among subjects presenting with pulmonary nodules (SIR 11.88), and the absence of a relationship between the presence of nodules and level of cumulative asbestos exposure was found. These observations do not provide any argument in favor of a surveillance-specific strategy based on cumulative asbestos exposure.⁸⁶

A Hong Kong retrospective multicenter study of initial pleurodesis in 2004 in patients with spontaneous pneumothorax (258 chemical and 136 surgical) showed considerable variation in practice, despite international guidelines.⁸⁷

CONCLUSIONS

It is hoped that this review, coupled with Part I, will provide the reader with a terse look at the detailed scientific and public health efforts of 194 contributions to the *Journal* for 2011.

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