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Communicable disease surveillance and control in the context of conflict and mass displacement in Syria



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SUMMARY

Objectives: To describe trends in major communicable diseases in Syria during the ongoing conflict, and the challenges to communicable disease surveillance and control in the context of dynamic, large-scale population displacement, unplanned mass gatherings, and disruption to critical infrastructure.

Methods: A rapid review of the peer-reviewed and non-peer-reviewed literature from 2005 to 2015 was performed, augmented by secondary analysis of monitoring data from two disease early warning systems currently operational in Syria, focusing mainly on three diseases: tuberculosis (TB), measles, and polio.

Results: Trend data show discrepancies in case report numbers between government and non-government controlled areas, especially for TB, but interpretation is hampered by uncertainties over sentinel surveillance coverage and base population numbers. Communicable disease control has been undermined by a combination of governance fragmentation, direct and indirect damage to facilities and systems, and health worker flight.

Conclusions: Five years into the crisis, some progress has been made in disease surveillance, but governance and coordination problems, variable immunization coverage, and the dynamic and indiscriminate nature of the conflict continue to pose a serious threat to population health in Syria and surrounding countries. The risk of major cross-border communicable disease outbreaks is high, and challenges for health in a post-conflict Syria are formidable.

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1. Introduction

The impact of conflict on communicable disease spread is well recognized, resulting from a combination of damage to critical infrastructure, including water and sanitation systems, reduced health system functionality, and – importantly – disruption to

surveillance, outbreak response systems, and other disease control measures.^{1,2} High profile outbreaks in Iraq and Syria in recent years have provided further evidence of this conflict-related public health threat in the Middle East, exposing the fragility of existing systems and the difficulties faced in maintaining and strengthening them.^{3,4}

Guidance for health interventions in complex emergencies consistently highlights the need for simple but effective health intelligence systems covering mortality and morbidity data, laboratory services to support prompt diagnosis, and outbreak response planning, among other elements.^{5–7} In disease surveillance

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terms, early warning systems – which rely on the identification of syndromes associated with diseases of public health importance (e.g. ‘influenza-like illness’) rather than formal laboratory diagnosis – are increasingly important in conflict-affected environments where passive, laboratory report-based systems may be impractical.^{8,9} Early warning systems have significant advantages in timeliness of reporting, flexibility to incorporate new syndromes of concern, and low administrative and laboratory burden. However, there are equally well-recognized limitations, including low specificity and positive predictive value (especially for diseases with non-specific symptom profiles) and high false-alarm rates, which contribute to difficulties identifying true departures from statistical norms for outbreak detection purposes.¹⁰

The nature of the conflict in Syria poses particularly formidable challenges to the practical implementation of communicable disease surveillance and control for several reasons. First and foremost among these is the scale of population displacement that has occurred since the start of the conflict. Around 6.6 million Syrians have been internally displaced, many on multiple occasions,¹¹ with over four million refugees now outside the country.¹² The rapidity and regularity of these movements both within Syria and across its borders pose significant barriers to the effective and timely collection of data. On one hand, the crisis demands new strategies for ‘undocumented’ populations or those living in informal settings, who account for up to 80% of refugees now living in some neighbouring countries.¹³ On the other, surveillance and control strategies must also apply to established and sizeable refugee populations in recognized camps, the existence of which predated the conflict (Yarmouk camp in Damascus, for example).

Second, the dynamics of the conflict in Syria – in particular the lack of regard for civilian safety, healthcare workers, and health facilities by warring parties – imposes major constraints on what is possible in surveillance and prevention. It is estimated that over seven million people within Syria are without access to basic healthcare,¹⁴ and malnutrition – a major risk factor for the spread of communicable disease – is a worsening problem especially among besieged populations. Third, a lack of donor funding for the health response in general has hampered efforts by the World Health Organization (WHO) to establish and maintain effective monitoring systems throughout Syria. Finally, a combination of direct and indirect infrastructure damage, loss of trained personnel, and equipment shortages has undermined the capacity of what was a relatively well-functioning health system by middle-income country standards.^{15,16}

The objectives of this paper are to examine the technical challenges to communicable disease prevention and control that have arisen in Syria and approaches implemented to date, with a view to providing realistic recommendations for improvement. The analysis was carried out in recognition of complex, ground-level realities featuring a combination of large-scale displacement and planned and unplanned mass gatherings in both formal and informal settings, and the immense personal safety risks to which many health workers in Syria are routinely exposed. The focus is placed on three exemplar diseases – measles, polio, and tuberculosis (TB) – with an emphasis on the situation inside Syria, although reference is also made to the situation in Turkey and Lebanon, countries that now host the largest numbers of Syrian refugees.

2. Methodology and conceptual framework

A rapid review of the peer-reviewed and non-peer-reviewed literature over a 10-year period between 2005 and 2015 was conducted to inform an assessment of communicable disease surveillance in Syria at ‘baseline’ (i.e., prior to the onset of the

crisis). Non-peer-reviewed data included material from reports published by multilateral organizations including the WHO and the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), international donors, and non-governmental organizations with a significant field presence in Syria and surrounding countries. This was augmented by the analysis of data drawn from the two principal syndromic surveillance systems currently in operation in Syria: the Early Warning and Response System (EWARS) for Syria,¹⁷ a system jointly administered by the WHO and the Syrian Ministry of Health, and the Early Warning and Response Network (EWARN),¹⁸ administered by the Assistance Coordination Unit (ACU), which operates only in non-government controlled areas (NGCAs). The ACU was established in September 2012 by the Syrian National Coalition to coordinate increasing volumes of aid coming into NGCAs, provide some basic services, and support local committees involved in information and basic service provision on the ground; its activities now incorporate epidemiological surveillance. The analysis focused on case reporting for TB, measles, and acute flaccid paralysis (AFP), the clinical case description for suspected polio, and incorporated reports from week 1 in 2014 to week 48 in 2015 (the period for which weekly reports under both systems were available at the time of writing).

In assessing communicable disease surveillance and response capacities in Syria, guidance was taken from the framework for assessing capacity for implementation of the International Health Regulations (IHRs) on a national level, issued by the WHO in 2010.¹⁹ This framework addresses governance and coordination, surveillance, outbreak preparedness and response, human resource development, and laboratory capacity, among other domains.

3. Results

3.1. Trends in major communicable disease groups in Syria, and issues in surveillance

Trend data from EWARN and EWARS over 2014 and 2015 (Figure 1) describe large variations in reports of suspected cases week by week in both systems, notwithstanding broadly similar case definitions for the three main diseases examined in this review (Table 1). Significant discrepancies by disease group are also visible; in particular, the reported case numbers for TB from EWARS are much greater than for EWARN. Upward trends in reports of severe acute respiratory illness (SARI – a general category including typical and atypical pneumonia, but excluding influenza-like illness) and acute bloody diarrhoea (ABD) are noted from EWARN data towards the end of 2015 and are suggestive of large outbreaks distinct from those reported earlier in the conflict.²⁰ Trends for measles case reporting through EWARN and EWARS appear better matched, albeit from a proportionately lower number of consults and sentinel sites for EWARN (Figure 2). Trends for AFP are not given in Figure 1 because case report numbers were low throughout the period; there were an average of 3.3 and 2.4 cases per week under EWARN and EWARS, respectively.

Detailed interpretation of these patterns is difficult for several reasons. First, variations in total numbers of consultations (trends for which were particularly erratic for EWARS at the beginning of the period) and sentinel site coverage both over time and between the two systems may partially explain observed trends. Sentinel site numbers for EWARS and EWARN rose by 120% and 260%, respectively, over the period, with broadly comparable median reporting rates at 83% and 86%, respectively. However, these factors are unlikely to account for relatively stable total consultation numbers reported through EWARS compared with a dramatic

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