



Results from the full European Launch of the Electronic Dysmorphology Diagnostic System (DDS)

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BACKGROUND

Introduction

- The rarity of dysmorphic conditions means that even in Centres of Expertise experience may be limited, resulting in delayed or uncertain diagnoses.
- A main aim of the DYSCERNE project (www.dyscerne.org) is to develop & launch an electronic Dysmorphology Diagnostic System (DDS) which links European Centres of Expertise in dysmorphology to form a powerful diagnostic tool and educational resource for rare dysmorphic conditions.

DYSCERNE Network

- The European DDS Network comprises **97 clinicians from 78 centres in 28 European countries** (fig. 1) with varying levels of expertise in dysmorphology.
- Members of the DDS Network can submit cases to the DDS for review by the DDS Expert Panel.



Figure 1: The European DYSCERNE Network

DDS Expert Panel

- Comprises the 11 clinicians from the DYSCERNE Partner centres and a further 26 Expert dysmorphologists, giving a total **37 Expert dysmorphologists from 32 European Centres of Expertise**.
- All Expert panel members are DYSCERNE Network members.
- There is list of the DDS Expert Panel members on the DYSCERNE website.

DDS Workflow

- Submitting Nodes submit patients' clinical information and images via an online submission form.
- An internal review ensures cases are appropriate for the DDS.
- Accepted cases are reviewed by the DDS Expert panel.
- A DYSCERNE Expert Case Report prepared from the consensus of Expert opinions, is sent to the Submitting Node, includes diagnostic suggestions and recommendations for further investigations or management of the patient.
- Cases with appropriate consent can be stored in the DDS Archive, which will be used to help define and classify new and rare dysmorphic conditions.

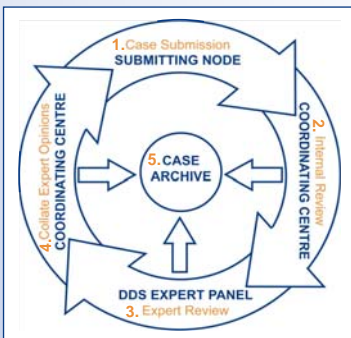


Figure 2: An overview of the DDS workflow

Pilot & Full Launch

- A pilot of the DDS software and work process ran for 4 months (19/12/08 - 30/04/09).
- The pilot involved 7 Submitting Nodes (Istanbul, Leuven, Manchester, Marseille, Nijmegen, San Giovanni Rotondo & Warsaw,), with a total of 20 cases being submitted for review by the DDS Expert Panel.
- On 01/05/09 the DDS was launched across the full European Network, with over 60 Centres having access by the end of June 09.

RESULTS

1. Case Submission

- From 19/12/08 – 30/04/10, **84 cases were submitted**, (average = 5.6 per month).

2. Internal Review

- The internal review outcomes for the 84 submitted cases are shown in table 1.
- Reasons for returning a case included: requests for clarification of terms or lab results, missing or inconsistent data or further details required.
- 82/84 of all internal review decisions (97.6%) were made within 5 working days.
- Of the 30 returned cases 27 were resubmitted and subsequently accepted on to the DDS, giving a total of **78 accepted cases** (92.9% of submitted cases), an average of **5.2 accepted cases per month**.

Table 1: Internal review outcomes

Outcome	No. of cases (% of total)
Rejected	3 (3.6)
Returned	30 (35.7)
Accepted	51 (60.7)
Total	84 (100)

3. Expert Review

- There was an **average of 6.0 Expert reviews per case**, with 26 cases (33.3%) having 7-12 reviews (fig. 3).

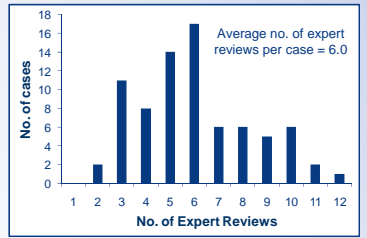


Figure 3: Number of Expert reviews/ case

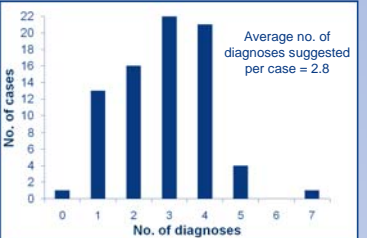


Figure 4: Number of diagnoses suggested/ case

Clinical Results

- All the cases could be described as complex phenotypes with combinations of dysmorphic features, varying congenital abnormalities affecting different body systems and a range of neurocognitive disabilities.
- Consensus clinical diagnosis**
 - Reached in **15% of the submitted cases**.
 - Diagnoses included: Acro-Cardio-Facial syndrome, Kabuki syndrome, Cerebro-Oculo-Facio-Skeletal Syndrom, Macrocephaly-Cutis-Marmorata-Telangiectasia Congenita, Mhyre Syndrome, Oculo-Ectodermal Syndrome
- 2 possible new recessive conditions**
 - Two pairs of siblings on the system have what is thought to be a **new recessively inherited syndrome**. Features include short stature, microcephaly,, developmental delay, malocclusion with prominent upper incisors / maxilla, scoliosis, tapering fingers and a Dandy Walker malformation.
 - Another pair of siblings on the system has raised the possibility of a separate **new recessively inherited condition**. Features include microcephaly, hypotonia and developmental delay, feeding difficulties, submucous cleft palate, blepharophimosis, hypertelorism epicanthic folds and abnormal ears.
- We are hoping all these cases will be published in the near future as case reports.
- Confirmation of a DDS diagnosis at a molecular level**
 - For one case the suggested DDS diagnosis of Coffin-Lowry syndrome has been **confirmed at a molecular level** by the detection of a RSK2 mutation.
- Further work is ongoing to evaluate the impact of the DYSCERNE Network and the DDS on patient management.

4. DYSCERNE Expert Case Report

- Summary reports were prepared an average of 5 weeks after case acceptance, depending on the timing & number of reviews, with **86.0% completed within 6 weeks**.
- 98.7% of cases had diagnoses suggested** (average = 2.8 per case, fig. 4).
- 91.0% had further investigations recommended** with 61 (78.2%) cases having either a molecular or cytogenetic test suggested.

Where can I find out more?

Our website is at www.dyscerne.org or you can contact:
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