

---

---

**ATLAS**  
of the  
**NEWBORN**

---

---

Second Edition

**Atlases of Childhood**

---

---

# **ATLAS** of the **NEWBORN**

---

---

**Neil O'Doherty**  
MD, FRCP, DCH

The Children's Hospital, Temple Street, Dublin

With an Introduction by

**Mary E. Avery**

Thomas Morgan Rotch Professor of Pediatrics  
Harvard Medical School



**MTP PRESS LIMITED**

a member of the KLUWER ACADEMIC PUBLISHERS GROUP  
LANCASTER / BOSTON / THE HAGUE / DORDRECHT



# To Angela

Published in the UK and Europe by  
MTP Press Limited  
Falcon House  
Lancaster, England

*British Library Cataloguing in Publication Data*

O'Doherty, Neil

Atlas of the Newborn.—2nd ed.—(Atlases  
of Childhood)

1. Infants (Newborn)—Diseases—Atlases

I. Title II. Series

618.92'01'0222 RJ254

ISBN-13: 978-94-011-7332-2

e-ISBN-13: 978-94-011-7330-8

DOI: 10.1007/978-94-011-7330-8

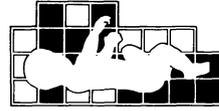
Published in the USA by  
MTP Press  
A division of Kluwer Boston Inc  
190 Old Derby Street  
Hingham, MA 02043, USA

Copyright © 1985 N. O'Doherty

Softcover reprint of the hardcover 2nd edition 1985

All rights reserved. No part of this  
publication may be reproduced, stored in a  
retrieval system, or transmitted in any form  
or by any means, electronic, mechanical,  
photocopying, recording or otherwise,  
without prior permission from the publishers.

# Contents



Introduction by *Professor M. E. Avery*

Preface

## Section I *The Normal Infant and his Trivial Complaints*

Introduction	3
Posture and Compressional Effects	5
The Skin	19
The Mouth	45
Sexual Characteristics	55
Navel and Cord	61

## Section 2 *Low-Birth-Weight Babies*

Introduction	67
The Low-Birth-Weight Baby	69
The Pre-Term Baby	77
The Small-For-Dates Baby	105
The Post-Term Baby	111

## Section 3 *Trauma*

Introduction	121
Intrauterine	123
Spontaneous Delivery	129
Obstetrician	147
Midwife	161
Pediatrician	167
The Baby	173
Family	181
Diagnostic Pitfalls	185

## Section 4 *Infection*

Introduction	191
Prenatal Infection	193
Neonatal Infection	203
The Aftermath of Infection	235

## Section 5 *Congenital Abnormality*

Introduction	241
What is the Matter?	245
What is the Plan?	313
Why did it Happen?	325
Could it Happen Again?	326

## Section 6 *Skin Defects*

Introduction	333
Vascular Birthmarks	337
Pigmented Birthmarks	357
Partial Thickness Defects	369
Keratinisation Disorders	377
Blistering and Bullous Disorders	381
Neuroectodermal Dysplasias	387

Index	401
-------	-----

# Introduction



What is a normal newborn infant? To answer that question requires an experience large enough to know the many variations that are considered within a normal range. Some of these variations can be measured, such as weight and length. Others are less easily measured, but have come to be recognized as common variants such as molding of the head or temporary deformations of limbs caused by unusual intrauterine positions. One way to recognize deviations from normal that may require intervention is to have a long experience examining many infants. Another way is to enrich a finite experience by access to a superb collection of photographs taken over a long period by a careful observer. No one student can possibly see all the normal and abnormal variations in newborn infants in the time allotted in most curricula, or for that matter in a lifetime. We are dependent on shared information.

An Atlas of the Newborn was long overdue. Anyone with experience in the nursery realizes that observation is the essential approach to evaluation of the newborn. What is it one observes? Obviously it is size and shape, it is activity and, most importantly perhaps, skin and its appendages. Gestational age can be deduced from developmental stages of the skin; state of oxygenation from skin colour; and many major and minor malformations are associated with skin tags, dimples, extra digits or other readily observable abnormalities. A surprising deficiency in the medical literature (now overcome) has been a collection of color photographs of the obvious signs that could be useful to the student of the newborn.

A trip to any of our medical libraries would make it apparent that there is a burgeoning literature relevant to the normal and abnormal newborn infant. This literature is expressed first in the form of publications in journals, then proceedings of symposia which try to establish the state of the art, and, as in all fields, finally compilations of information in the form of textbooks. Some of these textbooks started as single-authored but quickly became multi-authored as the amount of information that seemed important to convey exceeded the capacity of any individual to convey with great authority. Despite the proliferation of words, good color photographs are rare.

One wonders why a color atlas of the normal and abnormal newborn has been so long in coming. Perhaps it awaited a careful observer with a good camera and a willing publisher. At any rate, it is our good fortune that Professor Neil O'Doherty has undertaken this assignment. He has organized his approach under the following headings: "The Normal Infant and his Trivial Complaints", "Low-Birth-Weight Babies", "Trauma", "Infection", "Congenital Abnormality", and "Skin Defects". Professor O'Doherty has collected a superb group of colored photographs, and added a commentary which precedes the collection of photos.

The special qualities of this particular book are the numbers of color photographs that illustrate as words never can the findings of interest. An atlas such as this shares with all atlases the features of being a road map that allows one to establish a starting point. Other sources can then be approached for further discussion on pathogenesis and management. Unlike most publications, this work has little chance of becoming substantially out of date.

The observations presented here are timeless and are reproduced in most every active nursery every year. It seems improbable that the kinds of malformations, injuries, or lesions depicted will change significantly in the decades or even centuries to come.

The new edition of this book is particularly suited to meet the needs of the nurse, or student nurse, in delivery rooms or nurseries. She (or he) is the one who often makes the initial observations, and must know what is of trivial significance, or an early warning sign of major problems. This volume, to be read at leisure, or consulted in a crisis, should be of great help to all those who care for newborn infants.

Professor O'Doherty has made a major contribution for his contemporaries; it is almost certain that future generations of neonatologists and perinatologists will continue to refer to this careful collection of observations.

**Mary Ellen Avery, M.D.**

THOMAS MORGAN ROTCH PROFESSOR OF PEDIATRICS  
HARVARD MEDICAL SCHOOL  
BOSTON, MASSACHUSETTS

*July 1985*

# Preface



Nowadays most neonates in the developed countries are healthy babies born in hospitals where pediatric surveillance is the norm and help is readily available for the occasional serious problem. Historically, this is a complete turn-around since the pediatrician who made his debut as the saviour of the severely rhesus-affected is increasingly involved with the care of babies who appear to be symptom-free or at least present only some mild complaint. The time factor of 1-2 days lying-in has hampered the North American clinician slightly, but the gracious 7-10 days rest for lucky mothers elsewhere is being rapidly eroded to the shorter stay.

The nursery examinations are the most important in the life of the individual. No other set examination reveals so much that requires explanation or action. At no stage in life are the rewards higher for the preventive clinical approach. A thorough neonatal examination as a matter of routine should be one of the child's inalienable rights. The doctor must be familiar with all the relevant details of the family history, especially where there was death, handicap or deformity. Details of the pregnancy and delivery are essential but *above all* are the observations and feeling of the mother and the midwives and nurses involved with the baby. The baby is examined in the presence of the mother and a nursery nurse.

The doctor's interest comes from his ability to recognize each baby's individuality as the sum of his inheritance and life-experience to date. Confidence comes from his ability to distinguish trivial complaints from subtle early danger signals and take the appropriate steps in time.

# Section one

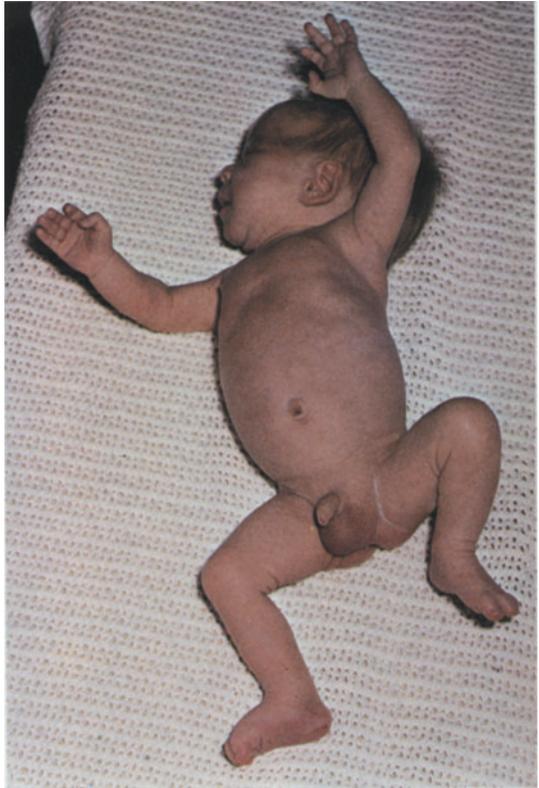


The normal infant and his trivial complaints

<b>Introduction</b>		<b>page 3</b>
<b>Posture and compressional effects</b>	illustrations 1-20	<b>5</b>
<b>The skin</b>	illustrations 21-63	<b>19</b>
<b>The mouth</b>	illustrations 64-78	<b>45</b>
<b>Sexual characteristics</b>	illustrations 79-87	<b>55</b>
<b>Navel and cord</b>	illustrations 88-91	<b>61</b>

*The most important part of the routine examination is the doctor's deliberate overall scrutiny of the fully-undressed baby. The full normal range of external appearances presents an infinite variety as a challenge to clinical alertness. A sound knowledge of the normal features is the safe foundation for effective day-to-day care of the average newborn; the doctor's confident enjoyment is immediately communicated to all involved. Attention is directed to the postural and compressional effects of prenatal and intrapartum influences, to the skin and its appendages, the mouth, sexual characteristics, and the navel together with the cord.*

- 1-4** When the baby is in a good state of arousal the normal posture is one of dominant flexion (1) with the limbs supported off the examining surface. If the baby is barely awake (2) the limbs normally rest on the surface. If this occurs when the baby is in a higher state of arousal, it is a non-specific sign of malaise (3: infant of diabetic mother; 4: after emergency Caesarean section) usually caused by hypotonia or weakness. In its most florid form it is called the (pithed) 'frog posture'.
- 5-7** Limb posture is normally affected temporarily when the head lies in the lateral position (5,6); the mental limbs extend and the occipital limbs flex (it is called the asymmetrical tonic neck response, or the 'fencer' posture). Occasionally, as a normal variation, the opposite can occur - mental limbs flex and occipital limbs extend (7). If asymmetrical tonic neck postures are strongly imposed some neurological disorder may exist.
- 8-12** Abnormal presentations show tell-tale postural effects in the neck, hyperextension of face or brow (8) and in the way the lower limbs are held after flexed or extended breech (9, 10). In any breech birth, the head is not moulded and the vertex is flattened with occipital overhang (11). This is in contrast with average normal axial moulding (12) which is most obvious in first pregnancies following prolonged engagement of the head.
- 13-15** The feet can be moulded into postural talipes (13) which is fully mobile (14) and the 'position of ease' demonstrated soon after birth (15).
- 16-20** Ear-to-shoulder compression is common. The mother may notice that the mandible is pushed up on the compressed side (16), but this straightens within weeks or at the most a few months. The side of the neck is excavated and the lower pinna sticks out if it has been caught on the point of the shoulder (17). The nose may be squashed out of shape (18) and even the vault may be a little crooked (19). These all straighten in due course. The compressed sternomastoid muscle, however, may develop a 'tumor' from ischemic necrosis; this will not be seen in the nursery as it does not appear until the end of the second week (20); the condition must be watched because torticollis may develop. In extreme cases there may be congenital facial palsy, which may persist.



1. Posture of the normal aroused infant



2. Posture of the normal infant when barely awake